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LONDON,
November 23, 1813.

THE CALENDAR OF JULIUS CÆSAR.

March.

UNDER THE PROTECTION OF MINERVA.

Nundinal Letters.	Days.	Golden Number.			
D	*NP*	I	1	*Kalen.*	The *Matronalia;* to *Mars,* the feast
E	*F*		2	*VI*	To *Juno Lucina* [of *Ancylia*
F	*C*	IX	3	*V*	The second *Pisces* sets
G	*C*		4	*IV*	[*cer* rises
H	*C*	XVII	5	*III*	*Arcturus* sets. *Vindemiator* rises. *Can-*
A	*NP*	V	6	*Prid.*	*Vestaliana.* Jul. Cæsar *made high priest*
B	*F*		7	*Non.*	To *Ve-Jupiter* in the Wood of the
C	*F*	XIV	8	*VIII*	*Corona* rises [*Asylum. Pegasus* rises
D	*C*	III	9	*VII*	*Orion* rises. The Northern *Pisces* rises
E	*C*		10	*VI*	
F	*C*	XI	11	*V*	
G	*C*		12	*IV*	
H	*EN*	XIX	13	*III*	The opening of the sea
A	*NP*	VIII	14	*Prid.*	*Second* Equiria *upon the* Tyber [sets
B	*NP*		15	*Id.*	To *Anna Parenna.* Parricide. Scorpio
C	*C*	XVI	16	*XVII*	[*Agonalia. Milvius* sets
D	*NP*	V	17	*XVI*	The *Liberalia,* or *Bacchanalia.* The
E	*C*		18	*XV*	The Sun in the sign *Aries*
F	*N*	XIII	19	*XIV*	The *Quinquatria* of *Minerva,* which
G	*C*	II	20	*XIII*	[last 5 days
H	*C*		21	*XII*	The 1st day of the century. *Pegasus*
A	*N*	X	22	*XI*	[sets in the morning
B	*NP*		23	*X*	The *Tubilustrium*
C	*QR*	XVIII	24	*IX*	[The *vernal* equinox
D	*C*	VII	25	*VIII*	The *Hilaria,* to the mother of the gods.
E	*C*		26	*VII*	
F	*NP*	XV	27	*VI*	*On this day* Cæsar *made himself master*
G	*C*	IV	28	*V*	The *Megalesia* [*of* Alexandria
H	*C*		29	*IV*	
A	*C*	XII	30	*III*	To *Janus,* to *Concord,* to *Salus* and *Pax*
B	*C*	I	31	*Prid.*	To the *Moon,* or *Diana* upon the [*Aventine* mount

THE CALENDAR OF JULIUS CÆSAR.

April.

UNDER THE PROTECTION OF THE GODDESS VENUS.

Nundinal Letters.	Days.	Golden Number.			
C	*N*	IX	1	*Kalen.*	To *Venus* with the flowers and myrtle.
D	*C*		2	*IV*	The *Pleiades* set [To *Fortuna Virilis*
E	*C*	XVII	3	*III*	
F	*C*	VI	4	*Prid.*	*The* Megalesian *games to the mother*
G			5	*Non.*	[*of the gods*, for 8 days
H	*NP*	XIV	6	*VIII*	To *Fortuna publica primigenia*
A	*N*	III	7	*VII*	The birth of *Apollo* and *Diana*
B	*N*		8	*VI*	Plays for *Cæsar*'s victory. *Libra* and
C	*N*	XI	9	*V*	[*Orion* set
D	*N*		10	*IV*	*Cerealia. Ludi Circenses*
E	*N*	XIX	11	*III*	[Plays in honour of *Ceres* for 8 days
F	*N*	VIII	12	*Prid.*	Mother of the gods brought to *Rome.*
G	*NP*		13	*Id.*	To *Jupiter*, *Victor*, and *Liberty*
H	*N*	XVI	14	*XVIII*	
A	*NP*	V	15	*XVII*	*Fordicidia*, or *Fordicalia* [set
B	*N*		16	*XVI*	*Augustus* saluted Emperor. *Hyades*
C	*N*	XIII	17	*XV*	[ing of the foxes
D	*N*	II	18	*XIV*	*Equiria in the Circus Maximus.* Burn-
E	*N*		19	*XIII*	*Cerealia.* Sun in the sign *Taurus*
F	*N*	X	20	*XII*	[*Rome*
G	*NP*		21	*XI*	*Paliliana*, or *Pariliana.* Nativity of
H	*N*	XVIII	22	*X*	The second *Agoniana*, or *Agonalia*
A	*NP*	VII	23	*IX*	The first *Vinalia* to *Jupiter* and *Venus*
B	*C*		24	*VIII*	
C	*NP*	XV	25	*VII*	*Robigalia. Aries* sets. Middle of spring
D	*F*	IV	26	*VI*	The *Dog-star* rises. The *Goat* rises
E	*C*		27	*V*	*Latinæ Feriæ* on the *Mons sacer*
F	*NP*	XII	28	*IV*	*Floralia* for 6 days. The *Goat* rises
G	*C*	I	29	*III*	*Dog-star* sets at night [in the morn.
H	*F*		30	*Prid.*	To *Vesta Palatina.* First *Larentalia*

THE CALENDAR OF JULIUS CÆSAR.

May.

UNDER THE PROTECTION OF APOLLO.

Nundinal Letters.	Days.	Golden Number.			
A	*N*	IX	1	*Kalen.*	To *Dea bona.* To *Lares præstites. Ludi*
B	*F*		2	*VI*	The *Compitalia* [*Flor.* for 3 days
C	*C*	XVII	3	*V*	The *Centaur* and the *Hyades* rise
D	*C*	VI	4	*IV*	
E	*C*		5	*III*	*Lyra* rises
F	*C*	XIV	6	*Prid.*	The middle of *Scorpio* sets
G	*N*	III	7	*Non.*	*Virgilia* rises in the morning
H	*F*		8	*VIII*	The *Goat* rises
A	*N*	XI	9	*VII*	*Lemuria* at night for 3 days. The [*Luminaria*
B	*C*		10	*VI*	
C	*N*	XIX	11	*V*	*Orion* sets: unfortunate days to marry
D	*NP*	VIII	12	*IV*	*To* Mars *the Avenger at the* Circus
E	*N*		13	*III*	*Lemuria. Pleiades* rise. Beginning of
F	*C*	XVI	14	*Prid.*	To *Mercury. Taurus* rises [summer
G	*NP*	V	15	*Id.*	To *Jupiter.* Feast of the merchants.
H	*F*		16	*XVII*	[Birth of Mercury. *Lyra* rises
A	*C*	XIII	17	*XVI*	
B	*C*	II	18	*XV*	
C	*C*		19	*XIV*	The Sun in *Gemini*
D	*C*	X	20	*XIII*	
E	*NP*		21	*XII*	The *Agonalia,* or *Agoniana* of *Janus*
F	*N*	XVIII	22	*XI*	To *Vejupiter.* The *Dog-star* rises
G	*NP*	VII	23	*X*	The *Feriæ* of *Vulcan.* The *Tubilus-*
H	*a. REX C. F.*		24	*IX*	[*trium*
A	*C*	XV	25	*VIII*	To *Fortuna publica. Aquila* rises
B	*C*	IV	26	*VII*	The second *Regifugium. Arcturus* sets
C	*C*		27	*VI*	The *Hyades* rise
D	*C*	XII	28	*V*	
E	*C*	I	29	*IV*	
F	*C*		30	*III*	
G	*C*	IX	31	*Prid.*	

THE CALENDAR OF JULIUS CÆSAR.

June.

UNDER THE PROTECTION OF MERCURY.

Dominical Letters.	Days.	Golden Number.			
II	*N*	XVII	1	*Kalen.*	To *Juno, Moneta, Tempestus, Fabaria*
A	*F*	VI	2	*IV*	To *Mars. Carna. Hyades* rise
B	*C*		3	*III*	To *Bellona*
C	*C*	XIV	4	*Prid.*	To *Hercules* at the *Circus*
D	*N*	III		*Non.*	To *Fides.* To *Jupiter Sponsor*
E	*N*		6	*VIII*	To *Vesta* [*turus* rises
F	*N*	XI	7	*VII*	*Piscatorian* days in *Camp. Mart. Arc-*
G			8	*VI.*	To *Intellectus* at the *Capitol* [ing of asses
H	*N*	XIX	9	*V*	*Vestaliana. Altar* of *Jup. Pistor.* Crown-
A	*N*	VIII	10	*IV*	*Matralia of Fortuna fortis*
B	*N*		11	*III*	To *Concord.* To Mother *Matuta*
C	*N*	XVI	12	*Prid.*	[Beginning of Heat
D	*N*	V	13	*Id.*	*Jupiter Invictus.* Lesser *Quinquatrus.*
E	*N*		14	*XVIII*	
F	*Q. ST D. F.*	XIII	15	*XVII*	*Carrying of the dung out of the Temple* [*of* Vesta. The *Hyades* rise
G	*C*	II	16	*XVI*	
H	*C*		17	*XV*	*Orion* rises
A	*C*	X	18	*XIV*	The whole *Dolphin* rises
B	*C*		19	*XIII*	[Sun in the sign *Cancer*
C	*C*	XVIII	20	*XII*	To *Minerva* upon Mount *Aventine.* The
D	*C*	VIII	21	*XI*	To *Summanus. Serpentarius* rises
E	*C*		22	*X*	
F	*C*	XV	23	*IX*	
G	*C*	IV	24	*VIII*	To *Fortuna fortis.* Summer *solstice*
H	*C*		25	*VII*	
A	*C*	XII	26	*VI*	The *Girdle* of *Orion* rises
B	*C*	I	27	*V*	To *Jupiter Stator* and *Lar*
C	*C*		28	*IV*	
D	*F*	IX	29	*III*	To *Quirinus* on the *Quirinal* Mount
E	*F*		30	*Prid.*	To *Hercules* and the *Muses. Poplifugia*

THE CALENDAR OF JULIUS CÆSAR.

Quintilis, or *July*.

UNDER THE PROTECTION OF JUPITER.

Nundinal Letters.	Days.	Golden Number.			
F	*N*	XVII	1	*Kalen.*	Removing from one house to another
G	*N*	VI	2	*VI*	
H	*N*		3	*V*	
A	*NP*	XIV	4	*IV*	*Corona* sets in the morning. *Hyades* rise
B	*N*	III	5	*III*	The *Poplifugium* [*Feminina*
C	*N*			*Prid.*	*Ludi Apollinares* for 8 days. To *Fortuna*
D	*N*	XI	7	*Non.*	*Nona Caprotinæ*. Md. serv. feast. *Romulus*
E	*N*		8	*VIII*	*Vitulatio*, or wanton rejoic. [disappeared
F	*EN*	XIX	9	*VII*	*Cepheus* rises at night [Mid. of *Capricorn*
G	*C*	VIII	10	*VI*	The *Etesian* winds begin to blow [sets
H	*C*		11	*V*	
A	*NP*	XVI	12	*IV*	*Birth of* Julius Cæsar.
B	*C*	V	13	*III*	[*Mercurialia* for 6 days
C	*C*		14	*Prid.*	To *Fortuna Feminina*. The *Merkatus*, or
D	*NP*	XIII	15	*Id.*	To *Castor* and *Pollux*
E	*F*	II	16	*XVII*	The foremost *Dog* rises
F	*C*		17	*XVI*	The fatal day of the battle of *Allia*
G	*C*	X	18	*XV*	
H	*NP*		19	*XIV*	*Lucaria*, games lasting 4 days
A		XVIII	20	*XIII*	*Plays for* Cæsar's *victory*. Sun in *Leo*
B	*C*	VII	21	*XII*	*Lucaria*
C	*C*		22	*XI*	
D		XV	23	*X*	The *games of* Neptune
E	*N*	IV	24	*IX*	[days. *Aquarius* sets
F	*NP*		25	*VIII*	*Furinalia*. *Circensian games* lasting 6
G	*C*	XII	26	*VII*	The little *Dog-star* rises
H	*C*	I	27	*VI*	*Aquila* rises
A	*C*		28	*V*	
B	*C*	IX	29	*IV*	
C	*C*		30	*III*	*Aquila* sets
D	*C*	XVII	31	*Prid.*	

THE CALENDAR OF JULIUS CÆSAR.

Sextilis, or *August*.

UNDER THE PROTECTION OF THE GODDESS CERES.

Nundinal Letters.	Days.	Golden Number			
E	*N*	VI	1	*Kalen.*	To *Mars.* To *Hope*
F	*C*	XIV	2	*IV*	*Feriæ, upon the account of* Cæsar's *sub-*
G	*C*	III	3	*III*	[*duing* Spain
H	*C*		4	*Prid.*	The middle of *Leo* rises
A	*F*	XI	5	*Non.*	To *Salus* on the *Quirinal* Mount
B	*F*		6	*VIII*	To Hope. The middle of *Arcturus* sets
C	*C*	XIX	7	*VII*	The middle of *Aquarius* sets
D	*C*	VIII	8	*VI*	*Soli Indigeti* on the *Quirinal* Mount
E	*NP*		9	*V*	
F	*C*	XVI	10	*IV*	To *Opis* and *Ceres*
G	*C*	V	11	*III*	To *Hercules* in the *Circus Flam. Lyræ*
H	*C*		12	*Prid.*	The *Lignapesia* [sets. Beg. of *autumn*
A	*NP*	XIII	13	*Id.*	To *Diana* in the *Sylvia Aricina.* To *Ver-*
B	*F*	II	14	*XIX*	*Dolphin* in the morning [*tumnus.* Feast
C	*C*		15	*XVIII*	[of slaves & servant maids
D	*C*	X	16	*XVII*	
E	*NP*		17	*XVI*	*Portumnalia* to *Janus*
F	*C*	XVIII	18	*XV*	*Consualia.* The *Sabine* virgins
G	*FP*	VII	19	*XIV*	The last *Vinalia.* Death of *Augustus*
H	*C*		20	*XIII*	*Lyra* sets. The Sun in *Virgo*
A	*NP*	XV	21	*XII*	*Vinalia Rustica.* Grand mysteries. *Con-*
B	*EN*	IV	22	*XI*	*Vindemiator* rises in the morning [*sualia*
C	*NP*		23	*X*	*Vulcanalia* in the *Circus Flaminius*
D	*C*	XII	24	*IX*	The *Feriæ* of the Moon
E	*NP*	I	25	*VIII*	*Opi Consivæ* in the Capitol
F	*C*		26	*VII*	
G	*NP*	IX	27	*VI*	*Volturnalia* [End of *Etesian* winds
H	*NP*		28	*V*	To *victory in the Court.* *Sagitta* sets.
A	*F*	XVII	29	*IV*	
B	*F*	VI	30	*III*	Ornaments of the goddess *Ceres* shown
C	*F*		31	*Prid.*	*Andromeda* rises at night

THE CALENDAR OF JULIUS CÆSAR.

September.

UNDER THE PROTECTION OF VULCAN.

Nundinal Letters.	Days.	Golden Number.			
D	*N*	XIV	1	*Kalen.*	To *Jupiter Maimactes.* Feasts to *Neptune*
E	*N*	III	2	*IV*	To the victory of *Augustus Feriæ*
F	*NP*		3	*III*	*Dionysiaca*, or *Vindennæ*
G	*C*	XI	4	*Prid.*	*Roman games* for 8 days
H	*F*		5	*Non.*	
A	*F*	XIX	6	*VIII*	To *Erebus*, of a ram and a black sheep
B	*C*	VIII	7	*VII*	The *Goat* rises
C	*C*		8	*VI*	
D	*C*	XVI	9	*V*	
E	*C*	V	10	*IV*	The head of *Medusa* rises
F	*C*		1	*III*	The middle of *Virgo* rises
G	*N*	XIII	12	*Prid.*	The middle of *Arcturus* rises
H	*NP*	II	13	*Id.*	To *Jupiter.* Dedication of the Capitol.
A	*F*		14	*XVIII*	*The trial of horses* [Nail fixed by *Prætor*
B		X	15	*XVII*	*The grand Circensian games*, dedicated
C	*C*		16	*XVI*	[for 5 days. The departure of swallows
D	*C*	XVIII	17	*XV*	
E	*C*	VII	18	*XIV*	*Spica Virginis* rises in the morning
F	*C*		19	*XIII*	The Sun in the sign *Libra*
G	*C*	XV	20	*XII*	*The Merkatus* for 4 days. Birth of *Ro-*
H	*C*	IV	21	*XI*	[*mulus*
A	*C*		22	*X*	*Argo* and *Pisces* set
B	*NP*	XII	23	*IX*	The *Circensian* games. *Birth of* Augustus.
C	*C*	I	24	*VIII*	The *Autumnal Equinox* [*Centaur* rises
D	*C*		25	*VII*	To *Venus, Saturn*, and *Mania*
E	*C*	IX	26	*VI*	
F	*C*		27	*V*	To *Venus* the mother, & *Fortuna redux*
G	*C*	XVII	28	*IV*	The end of *Virgo*'s rising
H	*F*	IV	29	*III*	
A	*F*	XIV	30	*Prid.*	A feast to *Minerva.* The *Meditrinalia*

THE CALENDAR OF JULIUS CÆSAR.

October.

UNDER THE PROTECTION OF THE GOD MARS.

Nundinal Letters.	Days.	Golden Number.			
B	*N*	III	1	*Kalen.*	
C	*F*		2	*VI*	
D	*C*	XI	3	*V*	
E	*C*		4	*IV*	*Bootes* sets in the morning
F	*C*	XIX	5	*III*	The ornaments of *Ceres* shown
G	*C*	VIII	6	*Prid.*	To the gods *Manes*
H	*F*		7	*Non.*	
A	*F*	XVI	8	*VIII*	The bright star *Corona* rises
B	*C*	V	9	*VII*	
C	*C*		10	*VI*	*Ramalia*
D		XIII	11	*V*	*Meditrinalia.* The beginning of winter
E	*NP*	II	12	*IV*	*Augustalia*
F	*NP*	X	13	*III*	*Fontinalia.* To *Jupiter Liberator. Games* [lasting for 3 days
G	*NP*		14	*Prid.*	
H	*NP*		15	*Id.*	The merchants to *Mercury*
A	*F*	XVIII	16	*XVII*	Popular games. *Arcturus* sets
B	*C*	VII	17	*XVI*	
C	*C*		18	*XV*	To *Jupiter Liberator.* Games
D	*NP*	XV	19	*XIV*	*Armilustrium*
E	*C*	IV	20	*XIII*	The Sun in the sign *Scorpio*
F	*C*		21	*XII*	Plays lasting 4 days
G	*C*	XII	22	*XI*	
H	*C*	I	23	*X*	To *Liber Pater. Taurus* sets
A	*C*		24	*IX*	
B	*C*	IX	25	*VIII*	
C	*C*		26	*VII*	
D	*C*	XVII	27	*VI*	*Plays* to Victory
E	*C*	VI	28	*V*	The lesser mysteries. *Virgiliæ* set
F	*C*		29	*IV*	
G	*C*	XIV	30	*III*	The *Feriæ* of *Vertumnus.* Games conse-
H	*C*	III	31	*Prid.*	*Arcturus* sets [crated

THE CALENDAR OF JULIUS CÆSAR.

November.

UNDER THE PROTECTION OF THE GODDESS DIANA.

Nundinal Letters.	Days.	Golden Number			
A	*N*		1	*Kalen.*	Banquet of *Jupiter. Circ.* games. Head
B	*F*	XI	2	*IV*	*Arcturus* sets at night [of *Taurus* sets
C	*F*		3	*III*	The *Fidicula* rises in the morning
D		XIX	4	*Prid.*	
E	*F*	VIII	5	*Non.*	*Neptunalia.* Games lasting 8 days
F	*F*		6	*VIII*	
G	*C*	XVI	7	*VII*	A show of ornaments
H	*C*	V	8	*VI*	*Scorpio* rises with a clear light
A	*C*		9	*V*	
B	*C*	XIII	10	*IV*	
C	*C*	II	11	*III*	Shutting up of the sea. *Virgiliæ* set
D	*C*		12	*Prid.*	
E	*NP*	X	13	*Id.*	*A feast commanded.* The *Lectisternia*
F	*F*		14	*XVIII*	*The trial of horses*
G	*C*	XVIII	15	*XVII*	*Popular games in the Circus* for 3 days
H	*C*	VII	16	*XVI*	The end of seed-time for corn
A	*C*		17	*XV*	[sign *Sagittarius*
B	*C*	XV	18	*XIV*	*The Merkatus* for 3 days. Sun in the
C	*C*	IV	19	*XIII*	Supper of the priests in honour of *Cybele*
D	*C*		20	*XII*	The horns of the Bull set
E	*C*	XII	21	*XI*	The *Liberalia. Lepus* sets in the morning
F	*C*	I	22	*X*	To *Pluto* and *Proserpina*
G	*C*		23	*IX*	
H		IX	24	*VIII*	*Bruma* or *Brumalia*, for the space of 30
A	*C*		25	*VII*	The little *Dog-star* sets [days
B	*C*	XVII	26	*VI*	
C	*C*	VI	27	*V*	Funeral sacrifices to the *Gauls* dug up,
D	*C*		28	*IV*	[and to the *Greeks*, in the *Foro boario*
E	*C*	XIV	29	*III*	
F	F	III	30	*Prid.*	

THE CALENDAR OF JULIUS CÆSAR.

December.

UNDER THE PROTECTION OF THE GODDESS VESTA.

Nundinal Letters.	Days.	Golden Number			
G	*N*	XI	1	*Kalen.*	To *Fortuna Fæmina*
H			2	*IV*	
A		XIX	3	*III*	
B		VIII	4	*Prid.*	To *Minerva* and *Neptune*
C	*F*		5	*Non.*	The *Faunalia*
D	*C*	XVI	6	*VIII*	The middle of *Sagittarius* sets
E	*C*	V	7	*VII*	*Aquila* rises in the morning
F	*C*		8	*VI*	
G	*C*	XIII	9	*V*	To *Juno Jugalis*
H	*C*	II	10	*IV*	
A	*NP*		11	*III*	*Agonalia.* The 14 *Halcyonian* days
B	*EN*	X	12	*Prid.*	
C	*NP*		13	*Id.*	The *Equiria*, or the race of horses
D	*F*	XVIII	14	*XIX*	*Brumalia. Ambrosiana*
E	*NP*	VII	15	*XVIII*	*Consualia.* All *Cancer* rises in the morning
F	*C*		16	*XVII*	
G		XV	17	*XVI*	The *Saturnalia*, lasting 5 days
H	*C*	IV	18	*XV*	*Cygnus* rises. Sun in sign *Capricorn*
A	*NP*		19	*XIV*	*Opaliana*
B	*C*	XII	20	*XIII*	*Sigillaria* for 2 days
C	*NP*	I	21	*XII*	*Angeronalia. Divalia.* To *Hercules* and *Venus*
D	*C*		22	*XI*	*Compitalia. Feriæ* to the *Lares.* Games
E	*NP*	IX	23	*X*	*Feriæ* of *Jupiter. Larentinalia* or *Quarentinalia. Goat* sets
F	*C*		24	*IX*	*Juvenalia.* Sports
G	*C*	XVII	25	*VIII*	End of the *Brumalia.* Winter *solstice*
H	*C*	VI	26	*VII*	
A	*C*		27	*VI*	To *Phæbus* for 3 days. The *Dolphin* rises in the morning
B	*C*	XIV	28	*V*	
C	*F*	III	29	*IV*	*Aquila* sets at night
D	*F*		30	*III*	*Canicula* sets at night
E	*F*	XI	31	*Prid.*	

FRENCH or REPUBLICAN CALENDAR.

Soon after the government was changed in France, it was decreed, on the 2d of January, 1792, that this year should be denominated the fourth of Liberty on their coins, and in their acts. After the death of Louis XVI, in 1793, it was determined that this year should be called the *first of the Republic;* and this suggested the idea of a Republican Calendar. Accordingly, on the 12th of January, 1793, the Deputy Romme, President of the Committee of Public Instruction under the Convention, applied to the Academy of Sciences for a commission to deliberate on this subject; but M. de la Lande protested against the change of the Calendar. He was obliged, however, to acquiesce, and prepare a new Calendar: after the example of the Egyptians, he preferred twelve equal months, with five intercalary days, and he adapted their denominations to the climate of Paris, which Fabre d'Eglantine expressed by the following terms, viz. (1.) *Vendemiaire*, vintage month, commencing September 23. (2.) *Brumaire*, foggy month, October 23. (3.) *Frimaire*, sleety month, November 22. (4.) *Nivose*, snowy month, December 23. (5.) *Pluviose*, rainy month, January 21. (6.) *Ventose*, windy month, February 20. (7.) *Germinal*, budding month, March 22. (8.) *Floreal*, flowery month, April 21. (9.) *Prairial*, meadow month, May 21. (10.) *Messidor*, harvest month, June 20. (11.) *Thermidor*, hot month, July 20. (12.) *Fructidor*, fruit month, August 19. These names are not entirely new, for in a Swedish Calendar of Flora, kept at Upsal by M. Berger, in the year 1755, the months are thus designated: (1.) Reviving winter month, commencing December 22. (2.) Thawing month, March 19. (3.) Budding month, April 12. (4.) Leafing month, May 9. (5.) Flowering month, May 25. (6.) Fruiting month, June 20. (7.) Ripening month, July 12. (8.) Reaping month, August 4.

(9.) Sowing month, August 28. (10.) Shedding month, September 22. (11.) Freezing month, October 28. (12.) Dead winter month, November 25.

This new Republican year is composed of 360 days. The remaining five days are called the complementary days; of which the first is the 18th of September; the second, the 19th; the third, the 20th; the fourth, the 21st; and the fifth, the 22d of September, being the last day of the French year. The first decree was issued the 5th of October, 1793, and it was followed by another on the 24th of November, or the 4th of Frimaire, in the second year of the republic, settling the commencement and organization of the year, and the names of the days and months. The decree of the National Convention comprehends four articles, viz. That the French æra should be reckoned from the foundation of the Republic, September 22, 1792, of the vulgar æra, on the day when the Sun arrived at the true autumnal equinox, in his entrance into the sign Libra, at 9h. 18′ 30″ in the morning, according to the observatory at Paris; that the vulgar year should be abolished in all civil concerns: that each year should commence at midnight with the day on which the true autumnal equinox falls according to the observatory at Paris: and that the first year of the French Republic had actually commenced at midnight of the 22d of September, 1792, and terminated at midnight between the 21st and 22d of September, 1793. The decree for adopting a rule of intercalation, in order to preserve the seasons at the same epochas of the year, comprises the following four articles: viz. That the fourth year of the Republican æra should be the first sextile; that it should receive a sixth complementary day; and that it should terminate the first *Franciade:* that the four following secular years in succession should be excepted from the last article; namely the first, second, and third secular years, 100, 200, 300, which

should be common; and that the fourth should be sextile: and that this should be the case every four centuries until the 40th, which should close with a common year, the year 4000.

In this new calendar, or almanack, the months consist of 30 days each, and are divided into three *decades*. The days of each decade are known by the name of *Primidi*, *Duodi*, *Tridi*, *Quartidi*, *Quintidi*, *Sextidi*, *Septidi*, *Octodi*, *Nonodi*, and *Decadi*. The day which begins at midnight is distributed into twelve parts, and these are decimally divided and subdivided. To the five supernumerary days in common years, and six in leap years, was applied the absurd appellation of *Sans Culottides*, borrowed from a term of reproach *(sans culotte)* which had been originally bestowed on the republican party, on account of the meanness of their rank and fortune; but which the same party afterwards attempted to render honourable and popular. This appellation also serves to distinguish the leap years.

This new Calendar has been for some time abolished, but the record of it is curious, and worthy of preservation.

ALMANACK—CALENDAR—EPHEMERIS.

All these words describe date-books for the current year.

According to Golius, *al manach* signifies 'the reckoning,' and is the Arabic designation given to a table of time, which the astrologers of the east present to their princes on New-year's day. Calendar is so called from the Latin *calendæ*, a Roman name for the first day of the month. Ephemeris is a Greek word, signifying *for the day*. Almanack, therefore, is a divider of time by the year; calendar, by the month; and ephemeris, by the day. 'Nature's almanack is the orbit of the earth; her calendar, the circuit of the moon; her ephemeris, the circumference of the globe.' 'The French name their annual

anthologies of poetry, Almanacks of the Muses.' 'The gardening book, which directs what work is to be done, what seeds are to be sown, every month, is fitly called the Gardener's Calendar.' 'A daily newspaper might aptly be denominated the Political Ephemeris.'

Verstegan fancies that almanack is derived from *all-monath*; but if the etymon was Anglo-Saxon, the present form of the word would be 'allmonth.' The first European date-book, which assumed the title of almanack, is the *almanach royale de France* of 1579: it includes notices of post-days, fairs, and festivals.

YEARS—MONTHS—WEEKS—DAYS.

Among different nations, the *beginning* of the year varied as well as the *length*. The Jews began their ecclesiastical year with the new moon of that month, whose full moon happened next after the vernal equinox. The church of Rome begin their year on the Sunday which falls on the said full moon, or that happens next after it; or on Easter Sunday. The Jews began their *civil* year with the new moon which has its full moon happening next after the autumnal equinox. The Grecians began their year with the new moon which happened next after the summer solstice. The Romans, according to *Plutarch*, began their year at March, from the time of *Romulus* to *Numa*, who changed the beginning to January. *Romulus* made the year consist of only ten months, as appears from the name of the last, *December*, or the tenth month; and that *March* was the first is evident, because they called the fifth from it *quintilis*, the sixth *sextilis*, and the rest in their order. The first month of the Egyptian year began on our August 29. The Arabic and Turkish year began on July 16. The antient Clergy made March 25 the beginning of the year.

The first division of the civil year is into civil *months*, of

which there are twelve. These cannot be of an equal length, because the number of days in a year is not divisible by 12. There are therefore, in every year, *seven* months of 31 days each, *four* of 30 days each, and in the common years *one* of 28 days, but which contains 29 in every leap year. These are the months used for civil purposes. But the space of 28 days is also called a month, and it is by the division of this into four equal parts that the year is subdivided into weeks, each consisting of seven days. Hence, a common year consists of 13 of these months, or 52 weeks and 1 day; and a leap year of the same, and 2 days.

The *days* into which the civil year is divided, are called *natural*, and contain 24 hours. But there is a day called *artificial*, which is the time from sun-rise to sun-set. The natural day is either *astronomical* or *civil*. The astronomical day begins at noon. The British, French, Dutch, Germans, Spaniards, Portuguese, and Egyptians, begin the civil day at midnight; the antient Greeks, Jews, Bohemians, and Silesians, began it at sun-setting, as do the modern Italians and Chinese; and the antient Babylonians, Persians, Syrians, and modern Greeks, at sun-rising. The Jews, Chaldeans, and Arabians, divide the hour into 1080 equal parts, called *scruples*[1].

DAYS OF THE WEEK.

The old Latin names for the days of the week are still retained in the journals of parliament and of medical men; they are as follow, beginning with Sunday—*dies Solis*, *dies Luna*, *dies Martis*, *dies Mercurii*, *dies Jovis*, *dies Veneris*, and *dies Saturni*. The northern nations substituted, for the Roman divinities, such of their own as

[1] For an explanation of the *Metonic Circle*, *Golden Number*, *Cycles*, and *Dominical Letter*, see pp. 91, 120.

most nearly resembled them in their peculiar attributes, and hence the derivation of the names now in use. VERSTEGAN, in his *Restitution of Decayed Intelligence*, 4to, Lond. 1634, thus describes the Saxon deities who presided over each day of the week. The *characters* sometimes employed to denote each day are prefixed.

☉ Sunday.

'Unto the day dedicated to the idoll of the SUN, they gave the name of *Sunday*, as much as to say as the *Sunne-day*, or the day of the *Sun*. This idoll was placed in a temple, and there adored, and sacrificed unto, for that they beleeved that the *Sun* in the firmament did with or in this idoll correspond, and co-operate. It was made like halfe a naked man, set upon a pillar, his face, as it were, brightened with gleames of fire, and holding, with both his armes stretched out, a burning wheele upon his breast; the wheele being to signifie the course which he runneth round about the world; and the fiery gleames, and brightnes, the light and heat wherewith he warmeth and comforteth the things that live and grow.'—(*Verstegan*, pp. 68, 69.)

☽ Monday.

'The next, according to the course of the dayes of the week, was the idoll of the *Moone*, whereof we yet retaine the name of *Monday*, instead of Mooneday. The forme of this idoll seemeth very strange and ridiculous, for, being made for a woman, shee hath a short coat like a man: but more strange it is to see her hood with such two long eares. The holding of a Moone before her breast may seeme to have beene to expresse what she is; but the reason of her chapron with long eares, as also of her short coat and pyked shooes, I do not finde.'—(*Verstegan*, pp. 69, 70.)

♂ Tuesday.

'*Tuisco*, or *Tuiscon* [was], the father and conductor of the Germans, who after his name, even unto this day, doe in their owne tongue call themselves *Tuytsh*, and their country of Germany *Tuytshland*: and the Netherlanders using herein the D for the T, doe make it *Duytsh* and *Duytshland*, both which appellations of the people and country I doe here write right according as we, in our English orthography, would write them, after their pronunciation.'—(*Verstegan*, p. 9.)

☿ Wednesday.

'The next was the idoll *Woden*, who was made armed, and, among our Saxon ancestors, esteemed and honoured for their god of battell, according as the Romans reputed and honoured their god Mars.—(*Verstegan*, p. 72.)

'*Odin* [or *Wodin*] is believed to have been the name of the one true God among the first colonies who came from the east, and peopled Germany and Scandinavia, and among their posterity for several ages. But at length a mighty conqueror, the leader of a new army of adventurers from the east, over-run the north of Europe, erected a great empire, assumed the name of *Odin*, and claimed the honours which had been formerly paid to that deity. From thenceforward this deified mortal, under the name of *Odin*, or *Wodin*, became the chief object of the idolatrous worship of the Saxons and Danes in this island, as well as of many other nations. Having been a mighty and successful warrior, he was believed to be the god of war, who gave victory and revived courage in the conflict. Having civilized, in some measure, the countries which he conquered, and introduced arts formerly unknown, he was also worshipped as the god of arts and artists. In a word, to this *Odin* his deluded worshippers impiously ascribed all the attributes which belong only to the true God: to

him they built magnificent temples, offered many sacrifices, and consecrated the fourth day of the week, which is still called by his name in England, and in all the other countries where he was formerly worshipped. Notwithstanding all this, the founders of all the kingdoms of the Anglo-Saxon heptarchy pretended to be descended from *Wodin*, and some of them at the distance only of a few generations.'—(*Henry's History of Great Britain*, vol. iii, pp. 175, 176.)

4 Thursday.

'The next in order was the idoll *Thor*, who was not onely served and sacrificed unto of the antient Pagan-Saxons, but of all the Teutonicke people of the septentrionall regions, yea, even of the people that dwelt beyond Thule or *Island*, for in Greeneland was he knowne and adored; in memory whereof a promontory or high poynt of land lying out into the sea, as also a river which falleth into the sea at the said promontory, doth yet beare his name. This great reputed god, being of more estimation than many of the rest of like sort, though of as little worth as any of the meanest of that rabble, was majestically placed in a very large and spacious hall, and there set as if he had reposed himselfe upon a covered bed. On his head he wore a crowne of gold, and round in compasse above, and about the same, were set or fixed twelue bright burnished golden starres. And in his right hand he held a kingly scepter. He was of the seduced Pagans beleeved to be of most maruelous power and might, yea, and that there were no people through out the whole world that were not subjected unto him, and did not owe him divine honour and seruice. That there was no puissance comparable to his: his dominion of all others most farthest extending it selfe, both in heaven and earth. That in the aire he governed the winds and the cloudes; and, being

displeased, did cause lightning, thunder, and tempests, with excessiue rain, haile, and all ill weather. But, being well pleased, by the adoration, sacrifice, and seruice of his suppliants, he then bestowed upon them most faire and seasonable weather, and caused corne aboundantly to growe, as also all sorts of fruites, &c. and kept away from them the plague and all other evill and infectious diseases. Of the weekly day which was dedicated unto his peculiar seruice, we yet retaine the name of *Thursday*, the which the Danes and Swedians doe yet call *Thors-day*. In the Netherlands, it is called *Dunders-dagh*, which, being written according to our English orthography, is *Thunders-day;* whereby it might appeare that they antiently therein intended the day of the god of *Thunder;* and, in some of our old Saxon bookes, I find it to have beene written *Thunres-deag*. So as it seemeth that the name of *Thor*, or *Thur*, was abbreviated of *Thunre*, which we now write *Thunder*.'—(*Verstegan*, pp. 73-75.)

'*Thor*, the eldest and bravest of the sons of *Odin* and *Frea*, was, after his parents, the greatest god of the Saxons and Danes while they continued heathens. They believed that *Thor* reigned over all the aërial regions, which composed his immense palace, consisting of five hundred and forty halls; that he launched the thunder, pointed the lightning, and directed the meteors, winds, and storms. To him they addressed their prayers for favourable winds, refreshing rains, and fruitful seasons; and to him the fifth day of the week, which still bears his name, was consecrated.'—(*Henry*, vol. iii, p. 177.)

♀ Friday.

'In her right-hand she [*Frea*, or *Friga*] held a drawne sword, and, in her left, a bow; signifying thereby that women, as well as men, should, in time of neede, be ready to fight. Some honoured her for a god, and some for a

goddesse, but she was ordinarily taken rather for a goddesse than a god; and was reputed the giver of peace and plenty, as also the causer and maker of love and amity; and of the day of her especiall adoration we yet retaine the name of Friday; and as, in the order of the dayes of the weeke, *Thursday* commeth betweene Wednesday and Friday, so (as *Olaus Magnus* noteth) in the septentrionall regions, where they made the idoll *Thor* sitting or lying in a great hall upon a covered bed, they also placed on the one side of him the idoll *Woden*, and, on the other side, the idoll *Friga*. Some do call her frea and not friga, and say she was the wife of *Woden*; but she was called *Friga*, and her day our Saxon ancestors called *Frige-deag*, from whence our name now of Friday in deed commeth.'—(*Verstegan*, pp. 76-77.)

'Next to *Odin*, *Frea*, or *Frigga*, his wife, was the most revered dignity among the heathen Saxons, Danes, and other northern nations. As *Odin* was believed to be the father, *Frea* was esteemed the mother of all the other gods. In the most ancient times *Frea* was the same with the goddess *Herthus*, or Earth, who was so devoutly worshipped by the Angli and other German nations. But when *Odin*, the conqueror of the north, usurped the honours due only to the true *Odin*, his wife *Frea* usurped those which had been formerly paid to mother Earth. She was worshipped as the goddess of love and pleasure, who bestowed on her votaries a variety of delights.'—(*Henry*, vol. iii, pp. 176, 177.)

♄ Saturday.

'The last, to make up here the number of seven, was the idoll *Seater*, fondly of some supposed to be *Saturnus*, for he was otherwise called *Crodo*. First, on a pillar was placed a pearch, on the sharpe prickled backe whereof stood this idoll. He was leane of visage, having long

haire and a long beard, and was bare-headed and bare-footed. In his hand he held up a wheele, and in his right he carried a paile of water, wherein were flowers and fruites. His long coate was girded unto him with a towell of white linnen. His standing on the sharpe finnes of this fish, was to signifie that the Saxons, for their serving him, should passe stedfastly, and without harme, in dangerous and difficult places. By the wheele was betokened the knit unity and conjoynted concord of the Saxons, and their concurring together in the running one course. By the girdle, which with the wind streamed from him, was signified the Saxons freedome. By the paile, with flowers and fruits, was declared, that with kindly raine he would nourish the earth, to bring foorth such fruites and flowers. And the day into which he yet gives the name of *Sater-day*, did first receive, by being unto him celebrated, the same appellation.'—(*Verstegan*, pp. 77-79.)

ASTRONOMICAL TERMS EXPLAINED.

1. A body is in *conjunction* with the Sun, when it has the same longitude; and in *opposition*, when the difference of their longitudes is 180°.

2. The *elongation* of a body is its angular distance from the Sun, when seen from the earth.

3. If a body in the heavens be referred to the horizon by a vertical circle, by drawing a vertical circle through it, the distance of that point of the horizon from the north or south points is called its *azimuth*; and the distance from the east or west points is called its *amplitude*. These four points are called the *cardinal* points.

4. The *nodes* are the points where the orbits of the primary planets cut the ecliptic, and where the orbits of the secondary planets cut the orbits of their primaries. That

node is called *ascending*, where the planet passes from the south to the north side of the ecliptic, and is marked thus, ☊; the other node is called *descending*, and is marked thus, ☋.

5. The *aphelion* is that point in the orbit of a planet which is farthest from the Sun; and the *perihelion* is that point which is nearest to the Sun.

6. The *apogee* is that point of the earth's orbit which is farthest from the Sun, or that point of the Moon's orbit which is farthest from the earth; and the *perigee* is that point of each orbit which is nearest to the Sun, or earth.

7. The *apsis* of an orbit is either its apogee or perigee, aphelion or perihelion.

8. A star is said to rise or set *cosmically*, when it rises and sets at Sun-rising; and when it rises or sets at Sun-setting, it is said to rise or set *achronically*.

9. A star is said to rise *heliacally*, when, after having been so near to the Sun as not to be visible, it emerges out of the Sun's rays, and just appears in the morning; and it is said to set *heliacally*, when the Sun approaches so near to it, that it is about to immerge into the Sun's rays, and to become invisible in the evening.

10. A *digit* is a twelfth part of the diameter of the Sun or Moon.

11. A *constellation* is a collection of stars contained within some assumed figure, as a *ram*, a *dragon*, a *Hercules*, &c. The whole heaven is thus divided into constellations.

Characters used for the Sun, Moon, and Planets.

☉ the Sun	♂ Mars
☽ the Moon	♃ Jupiter
☿ Mercury	♄ Saturn
♀ Venus	♅ Georgian.
⊖ the Earth	

January.

THIS month was so called by the Romans from *Janus*, one of their divinities, to whom they gave two faces; because on the one side the first day of this month looked towards the new year, and on the other towards the old one. January is thus described by PEACHAM (*Gentleman's Exercise*, 4to, 1661, p. 421), 'January would be clad all in white, like the colour of the earth at this time, blowing his nailes; in his left arm a billet; the sign *Aquarius* by his side.' According to VERSTEGAN (*Restitution of Decayed Intelligence*, 4to, 1634, p. 59), the Saxons named January '*wolf-monat*, to wit, *wolf-moneth*, because people are wont alwaies in that moneth to be in more danger to be devoured of wolves, then in any season else of the yeere; for that through the extremity of cold, and snow, those raveneous creatures could not find of other beasts sufficient to feed upon.'

Freze January, leader of the year,
Minced pies in van, and calf's head in the rear.

Remarkable Days.

I.—CIRCUMCISION.

On this day is celebrated the Circumcision of our Saviour, a rite of the Jewish law, first enjoined to Abraham as a token of the covenant God made with him and his posterity.

The institution of this festival may be traced to the *sixth* century at latest, a special office being provided for it by the Second Council of Tours. The office of the Circumcision was composed, for reasons, in some respects, similar to those for which the Homily was written. The *Calends* of January, or the beginning of the New Year, was a stated annual heathen festival, celebrated in the most gross and licentious manner: even after the suppression of these idolatrous rites by the emperors, men and women exchanged dresses, and many irregularities took place at this season. By some, this festival is called the 'Octave of Christmas,' but, by most persons, 'New Year's Day.' At the commencement of the *New Year*, we rejoice with our friends, after having escaped the dangers that attend every season; and congratulate each other by presents and wishes for the happy continuance of that course, which the antients called *Strenarum Commercium*. The value of the thing given is not so much an object, as the time of giving it, and the civilities with which it is presented.

The Romans, at this time, sent presents of sweetmeats, as dried figs, honey, &c. (*strenæ*), expressing a wish, that their friends might enjoy the *sweets* of the year, into which they had entered. A relic of this custom is still observed in the south of Scotland, where the *sweetie-skon*, a sort of plum-cake, constitutes the New Year's Gift. Among the *northern nations*, it was customary for subjects to present gifts to

their sovereigns, which were called *jolagiafir*, yule-gifts.

An antient custom, yet retained in many places, was once practised on New Year's Eve; young women went about with a wassail-bowl of spiced ale, and sung verses as they went from door to door. The composition was ale, nutmeg, sugar, toast, and roasted crabs or apples. It was called *Lamb's Wool.* The antient phrases of quaffing among the English (was-haile and drinc-heil) are synonymous with the 'come here's to you,' and 'I'll pledge you,' of the present day.

In Gloucestershire, the wassailers still carry about a great bowl, dressed up with garlands and ribbons, and sing the following verses:—

Wassail! wassail! all over the town,
Our toast it is white, our ale it is brown;
Our bowl it is made of a maplin tree,
We be good fellows all, I drink to thee.
Here's to ****[1], and to his right ear,
God send our measter a happy new year;
A happy new year as e'er he did see—
With my wassailing bowl I drink to thee.

Here's to ****[2], and to his right eye,
God send our mistress a good Christmas pye;
A good Christmas pye as e'er I did see—
With my wassailing bowl I drink to thee.

Here's to Filpail[3], and to her long tail,
God send our measter us never may fail,
Of a cup of good beer, I pray you draw near;
And then you shall hear our jolly wassail.

Be here any maids, I suppose here be some;
Sure they will not let young men stand on the cold stone:
Sing hey O maids, come trole back the pin,
And the fairest maid in the house, let us all in.

Come, butler, come bring us a bowl of the best;
I hope your soul in heaven will rest:
But if you do bring us a bowl of the small,
Then down fall butler, bowl, and all.

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[1] The name of some horse. [2] The name of another horse.
[3] The name of a cow.

6.—EPIPHANY.

On the *Epiphany* or *manifestation* of Christ to the Gentiles, commonly called *Twelfth Day*, the Eastern magi were guided by the star to pay homage to their Saviour; and it takes its name from their coming on that day, which was the twelfth after the nativity. The rites of this day are different in various places, though the object of them is much the same in all; namely, to do honour to the memory of the Eastern magi, who, according to a tradition of the Romish Church, were three in number, and of royal dignity. The usual celebration of Twelfth-day, in the metropolis and in the south of England, is by drawing lots, and assuming fictitious characters for the evening:—formerly the king or queen was chosen by a *bean* found in a piece of divided cake; and this was once a common Christmas gambol in both the English Universities. This custom is alluded to by Herrick, in his '*Twelfe Night, or King and Queene.*'

Now, now the mirth comes,
With the cake full of plums,
Where Beane's the king of the sport here;
Beside we must know,
The Pea also
Must revell, as queene in the court here.

The same author, in his *Hesperides*, gives the following description of the pleasantries of St. Distaff's Day, or the morrow after Twelfth Day:—

Partly worke and partly play,
You must on St. Distaff's Day:
From the plough soon free your teame;
Then come home and fother them.
If the maids a spinning goe,
Burne the flax and fire the tow.

* * *

Bring in pails of water then,
Let the maids bewash the men.
Give St. Distaff all the right:
Then bid Christmas sport good night;
And next morrow, every one
To his owne vocation.

8.—SAINT LUCIAN.

Saint Lucian, confessor and martyr, was born at Samosata in Syria. He was well versed in the Hebrew language, and employed much time in comparing and amending the copies of the Bible. Being at Nicomedia, where the Emperor Maximinus II. resided, and having recited an apology for the Christian religion, which he had composed, before the governor of the city, he was cast into prison; and, after having endured the most cruel torments, was put to death.

10.—PLOUGH MONDAY.

On this day, or about this time, in the north, the *fool-plough* goes about, a pageant that consists of a number of sword-dancers, dragging a plough, with music, and one, sometimes two, in a very fantastic dress; the *Bessy*, in the grotesque habit of an old woman, and the *fool*, almost covered with skins, wearing a hairy cap, and the tail of some animal hanging from his back. The office of one of these characters is, to rattle a box among the spectators of the dance, in which he collects their little donations. This pageant or dance, as used at present, seems to be composed of the gleanings of several obsolete customs followed antiently, here and elsewhere, on this and other festive occasions.

13.—SAINT HILARY.

Hilary was born at Poictiers in France, of an illustrious family; and of this place he was chosen bishop in the year 353. Having taken an active part against the Arians, he was banished to Phrygia, by order of the Emperor Constantius, in 356, where he remained for three years. After various travels in different parts, and many sufferings, Hilary died at Poictiers in 368. He was an excellent orator and poet; his style abounds with rhetorical figures.

18.—SAINT PRISCA.

Prisca, a Roman lady, was early converted to Christianity; but refusing to abjure her religion, and to offer sacrifice when she was commanded, was hor-

ribly tortured, and afterwards beheaded, under the Emperor Claudius, in the year 275.

20.—SAINT FABIAN.

He succeeded to the Pontificate in 236. It is related by Eusebius, that, in an assembly of the people and clergy held for the election of a pastor in his stead, a *dove* unexpectedly appearing, settled, to the great surprise of all present, on the head of Saint Fabian, and that this miraculous sign determined his promotion. He suffered martyrdom in the persecution of Decius, in the year 250.

21.—SAINT AGNES.

Agnes, a young Roman lady, of a noble family, suffered martyrdom in the tenth general persecution, under the Emperor Dioclesian, in the year 306. Although the executioners wounded her most cruelly with the sword, yet she bore it with incredible constancy, singing hymns all the time: she was then no more than thirteen or fourteen years of age.

This saint is pourtrayed with a *lamb* by her side, from the following circumstance: About eight days after her execution, her parents going to lament, and pray at her tomb, where they continued watching all night, it is *reported* that there appeared to them a vision of angels, arrayed in glittering and glorious apparel; among whom they saw their own daughter, clothed in the same manner, and a lamb standing by her as white as snow. After that time, the Roman ladies went every year to present her, on this day, with the two best and purest white lambs they could possibly procure. These they offered at St. Agnes's altar, and the Pope directs them to be put into the choicest pastures till the time of sheep-shearing arrive: at this season the wool is taken, with which a fine white cloth is made and consecrated every year by the Pope himself, for the palls which he sends to every archbishop; and which till they have purchased at a most extravagant price, they cannot exercise any metropolitical jurisdiction.

On the eve of St. Agnes's Day, many kinds of

divinations are practised by young virgins in the north to discover their future husbands.

On sweet St. Agnes' night
Please you with the promised sight,
Some of husbands, some of lovers,
Which an empty dream discovers. JONSON.

'Upon St. Agnes's night, take a row of pins, and pull out every one, one after another, saying a pater noster, sticking a pin in your sleeve, and you will dream of him or her you shall marry.'—(*Aubrey's Miscell.* p. 136.)

22.—SAINT VINCENT.

Vincent, a deacon of the church in Spain, was born at Osca, now Huesca in Granada. He was instructed in divinity by Valerius, bishop of that city; but, on account of an impediment in his speech, never took upon himself the office of preaching. He suffered martyrdom in the Dioclesian persecution, about the year 303, being extended upon burning coals; and, after his body was broiled there, he was thrown upon heaps of broken tiles.

25.—CONVERSION OF SAINT PAUL.

This day celebrates the miraculous conversion of St. Paul. He suffered martyrdom under the general persecution of Nero. Being a Roman citizen, he could not be crucified by the Roman laws, as his colleague Saint Peter was; he was, therefore, beheaded:—hence the usual representation of him with a sword in his hand. Saint Chrysostom tells us that his picture was preserved by some of the Christians in his time, and that he was but of a low stature, (three cubits) that is, four feet six inches high. Nicephorus describes him as a small man, somewhat crooked, of a pale complexion, and appearing older than he really was.

30.—KING CHARLES I, MARTYR.

The street before Whitehall was the place chosen for the execution of the king. When he had ascended the scaffold, he addressed himself to the persons near

him, and said, he forgave all his enemies, even the chief instruments of his death; but exhorted them and the whole nation to return to the ways of peace, by paying obedience to their lawful sovereign, his son and successor. When he was preparing himself for the block, Bishop Juxon called to him, 'There is, Sir, but one stage more, which, though turbulent and troublesome, is yet a very short one. Consider, it will soon carry you a great way; it will carry you from earth to heaven; and there you shall find, to your great joy, the prize to which you hasten, a crown of glory.' 'I go,' replied the king, 'from a corruptible to an incorruptible crown; where no disturbance can have place.' At one blow was his head severed from his body. A man in a vizor performed the office of executioner; another, in a like disguise, held up to the spectators the head streaming with blood, and cried aloud, '*This is the head of a traitor!*'—(*Hume.*)

The fact of King Charles's burial at Windsor has been for a long time disputed; the most important confirmation of this fact, that of finding the body at Windsor, not having been obtained. In the last year, however, this circumstance has been placed beyond all doubt; the body being discovered in St. George's Chapel, Windsor, by Sir Henry Halford. 'On removing the pall,' says Sir Henry, 'a plain leaden coffin, with no appearance of ever having been inclosed in wood, and bearing an inscription, 'King Charles 1648,' in large legible characters on a scroll of lead, encircling it, immediately presented itself to view. A square opening was then made in the upper part of the lid, of such dimensions as to admit a clear insight into its contents. These were, an internal wooden coffin very much decayed, and the body carefully wrapped in cerecloth, into the folds of which a quantity of unctuous or greasy matter, mixed with resin, as it seemed, had been melted, so as to exclude, as effectually as possible, the external air. The coffin was completely full; and from the tenacity of the cere-

cloth, great difficulty was experienced in detaching it successfully from the parts which it enveloped.—Wherever the unctuous matter had insinuated itself, the separation of the cerecloth was easy; and when it came off, a correct impression of the features to which it had been applied was observed in the unctuous substance. At length, the whole face was disengaged from its covering. The complexion of the skin of it was dark and discoloured. The forehead and temples had lost little or nothing of their muscular substance; the cartilage of the nose was gone; but the left eye, in the first moment of exposure, was open and full, though it vanished almost immediately; and the pointed beard, so characteristic of the period of the reign of King Charles, was perfect. The shape of the face was a long oval; many of the teeth remained; and the left ear, in consequence of the interposition of the unctuous matter between it and the cerecloth, was found entire.

'On holding up the head, to examine the place of separation from the body, the muscles of the neck had evidently retracted themselves considerably; and the fourth cervical vertebra was found to be cut through its substance, transversely, leaving the surfaces of the divided portions perfectly smooth and even; an appearance which could have been produced only by a heavy blow, inflicted with a very sharp instrument, and which furnished the last proof wanting to identify King Charles the First. After this examination of the head, which served every purpose in view, and without examining the body below the neck, it was immediately restored to its situation, the coffin soldered up again, and the vault closed.'

A brutal and unmanly insult to the memory of this martyred sovereign was, some years since, annually offered, on the 30th of January; but we trust, for the honour of the national character, that this execrable practice is quite extinct: we allude to the disgraceful orgies of the CALVES'-HEAD CLUB.

This club was instituted by the adherents of Crom-

well, to commemorate the beheading of King Charles I; and it is said, by the author of the 'Republican Unmasked,' to have been formed in opposition to Bishop Juxon, Dr. Sanderson, Dr. Hammond, and some other divines of the Church of England, who met privately every 30th of January, and who had compiled a private form of service for the day, not very different from that at present in our liturgy.

After the table-cloth was removed (says this author), an anniversary anthem was sung, and a calf's skull filled with wine or other liquor; and then a brimmer went about to the pious memory of those worthy patriots that had killed the tyrant, and delivered their country from his arbitrary sway. And, lastly, a collection was made for the writer of the anthem, to which every man contributed according to his zeal for the cause, or the ability of his purse. The concluding stanzas of the anthem for the year 1697, are as follow:

Advance the emblem of the action!
  Fill the calf's skull full of wine;
Drinking ne'er was counted faction,
  Men and gods adore the vine.
To the heroes gone before us,
  Let's renew the flowing bowl;
While the lustre of their glories
  Shines, like stars, from pole to pole.

In the *Gentleman's Magazine* for 1735 (vol. v, p. 105), the following circumstance is recorded: 'Some young noblemen and gentlemen met at a tavern in Suffolk Street, on the anniversary of King Charles's martyrdom, calling themselves the *Calves' Head Club*. They dressed up a calf's head in a napkin and, after some huzzas, threw it into a bonfire, and dipped napkins in their red wine, and waved them out of the window. The mob had strong beer given them, and, for a time, hallooed as well as the best; but, taking disgust at some healths proposed, grew so outrageous, that they broke all the windows, and forced themselves into the house; but the guards, being sent for, prevented farther mischief.'

Astronomical Occurrences.

We naturally observe the beginnings and ends of years, and months, and other settled portions of time; we note the occurrences which take place as these intervals elapse; and we do this wisely and beneficially, although we can tell but little of time in itself. Yet metaphysicians are tempted to speculate on its nature; while astronomers and other men of science define it in its relations to the various subjects which they investigate. God only hath true immortality or eternity; that is to say, 'Continuance in which there grows no difference by the addition of Hereafter unto Now;' whereas other creatures, how noble soever they may be in their nature or their tendencies, have, by reason of their continuance, the time of their former continuance lengthened, and the time of their subsequent continuance (at least in the present state of being) shortened.

Hence the importance of regarding time in its perpetual current, and hence the most obvious of its definitions, as it has been very accurately expressed by Hooker in the following terms: 'Time, considered in itself, is but the flux of that very instant wherein the motion of the heaven began; being coupled with other things, it is the quantity of their continuance measured by the distance of two instants. As the time of a man is a man's continuance from the instant of his first breath till the instant of his last gasp.' Thus, time serves for the measure of other things, while itself is measured by means of motion and number. It is not, however, an effect of motion, nor is it a result of number; for it would be easy to conceive of time, though motion and number were not. Time, regarded as the quantity of continuance, may as well be *imagined* in reference to a single thing at rest, as to a multitude in motion. Motion, however, is necessary to measure and compare the portions of

duration; for to say accurately *how long* or *how short* the continuance of a thing may be, without a reference to motion, were impossible. Thus, the motion of the sand in a glass has served to mark the *hour*; of the shadow on a dial, to mark the returns of noon, or the measure of a *day*; that of the Moon to define a lunation or *month*; and that of the Sun through the ecliptic, to fix the terms of the *year*. And thus much may suffice to say of time in relation to the present subject: for more on time in general, we refer to the Pantologists and Lexicographers.

In the time of Numa Pompilius, the month of January, which was then, as well as now, the first in the year, commenced at the winter solstice, or the time when the Sun entered Capricorn; with us, at the present period, January commences ten days after the Sun's apparent ingress into that sign. Of course, the days are not now at the shortest, but have lengthened about four minutes since the shortest day.—Taking intervals of ten days through the month, the times of the Sun rising and setting, at London, will be,

Saturday,	1st, Sun rise 8 h. 5 m.	Sun set 3 h. 55 m.
Tuesday,	11th, - - - - 7 h. 56 m.	- - - - 4 h. 4 m.
Friday,	21st, - - - - 7 h. 44 m.	- - - - 4 h. 16 m.

Equation of Time.—This is the adjustment of the *difference* of time, as shown by a well-regulated clock and a true sun dial. [See explanation in Occurrences for March.] A good clock measures that equable time which the rotation of the earth on its axis exhibits; whereas the dial measures time by the *apparent* motion of the Sun, which, from a cause hereafter to be explained, is subject to variation. Equal or true time is measured by an accurate clock; apparent time, by the dial. To find true time, we must *add* or *subtract*, as the case may require, a certain number of minutes and seconds to apparent time, which is marked by the dial. The following table will show what is to be added for every fifth day of the month of January:—

Saturday, Jan. 1, to the time on the dial ADD	3 m.	48 sec.
Thursday, - - 6, - - - - - - - - - -	6 m.	5 sec.
Tuesday, - - 11, - - - - - - - - - -	8 m.	11 sec.
Sunday, - - 16, - - - - - - - - - -	10 m.	3 sec.
Friday, - - 21, - - - - - - - - - -	11 m.	37 sec.
Wednesday, - 26, - - - - - - - - - -	12 m.	53 sec.
Monday, - - 31, - - - - - - - - - -	13 m.	48 sec.

That is, when it is 12 o'clock on the dial, it must, on the 1st of January, be 3 m. 48 sec. after 12 by the clock; which is true time.

The Sun will enter Aquarius on the 20th day, at 34 min. past 2 o'clock in the afternoon.

The Moon will be in the full on Thursday, the 6th day, at 8 min. past 7 in the morning; and the ensuing new Moon will occur on Friday the 21st day, at 13 m. past 2 in the morning. The time of the Moon's rising, for the first 5 days after she is in the full, will be as follows; viz.

Jan. 7th, 5 h. 44 m. P.M.	Jan. 8th, 7 h. 0 m. P.M.
Jan. 9th. 8 h. 14 m. P.M.	Jan. 10th, 9 h. 27 m. P.M.
Jan. 11th, 10 h. 40 m. P.M.	

They who travel at night will do well to bear in mind, that this luminary gives no useful light till nearly an hour after she has arisen.

There will be a *solar eclipse* on the 21st day, that is, at the time of the *new Moon;* but it will not be visible in England.

On the 1st day of this month, the Moon will eclipse the star, marked μ Ceti, in astronomical catalogues. The immersion will occur at 17 m. past 9 in the evening, when the star will be 11′½ north of the Moon's centre; and the emersion at 12 m. past 10, the star being then 9′ north of the centre of that luminary.

Another star, namely ζ II, will be eclipsed by the Moon on the 6th day. The immersion will take place at 41 m. past 2 in the morning, the emersion at 15 m. past 3: in both cases, the star will be about 14′ N. of the Moon's centre.

The Moon will likewise eclipse a third star, viz.

2 ξ Ceti, on the 28th. The time of immersion will be 31 m. past 8 o'clock in the evening; that of emersion 32 m. past 9: in the former case the star will be 6′, in the latter 7′ south of the Moon's centre.

Mercury will appear at his greatest elongation from the Sun on the 2d day; and Saturn will be in conjunction with that luminary on the 12th.

The astronomical observer may be informed that eclipses[1] of Jupiter's 1st satellite will be visible at the following times, viz. the immersions on the

2d	day, at	12 min.	past	6	in the morning.
3d	- -	40	- - -	12	- - - evening.
11th	- -	33	- - -	2	- - - morning.
18th	- -	27	- - -	5	- - - morning.
19th	- -	55	- - -	10	- - - evening.
25th	- -	20	- - -	6	- - - morning.
26th	- -	17	- - -	7	- - - evening.

These are the principal circumstances to which the attention of the student need be called during the present month.

VIEW OF THE SOLAR SYSTEM.

If we were required to point to one of the grandest trophies of mental power, we should immediately select the invention of the Copernican and Newtonian hypotheses of planetary motion. Nothing can *seem* more disorderly than the motions of the planets; so apparently anomalous and wandering, indeed, are they, that the very name by which these bodies are now designated, was originally appropriated to them by the Greeks, from that circumstance. Viewed in the most cursory manner, the numerous brilliant spangles which deck the heavens on a clear night, must excite the liveliest admiration: shepherds and poets, who have traced them simply thus, have regarded them as chinks through which,

[1] The particular uses and application of these eclipses will be hereafter explained.

the Divine glory and splendour lying beyond, are let in upon this nether world. But the energies of philosophy, directed for successive ages towards the celestial bodies, have gradually penetrated the obscurity through which they seemed to shine, and from apparent irregularity and confusion have educed order, beauty, harmony, and law.

'The mind of man (says the great Lord Bacon) doth wonderfully endeavour, and extremely covet this, that it may not be pensile; but that it may light upon something fixed and immoveable, on which, as on a firmament, it may support itself in its swift motions and disquisitions.' Systems indeed, and astronomical systems perhaps more than others, in many respects resemble machines. A machine is a little system created to perform, as well as to connect together in reality, those different movements and effects which the artist has occasion for. A system is an imaginary machine, invented to connect together in the fancy those different movements and effects which are already in reality performed. The machines that are first invented to perform any particular movement are always the most complex; and succeeding artists generally discover that with fewer wheels, with fewer principles of motion than had originally been employed, the same effects may be more easily produced. The first systems, in the same manner, are always the most complex, and a particular connecting chain or principle is generally thought necessary to unite every two seemingly disjointed appearances; but it may happen, and in truth *has* happened, that one great connecting principle is afterwards found to be sufficient to bind together all the discordant phenomena that occur in a whole species of things. Thus, instead of the cycles and epicycles, in endless and inextricable groups, to which the antient astronomers had recourse, the modern system introduces to our notice simple and independent ellipses in which the planets move, by

reason of the due adjustment of the projectile and central forces.

According to the modern scheme of astronomy, as now received, confirmed, and irrefragably established, each star is to be regarded as the centre and main body of a system containing planets, secondary planets, or moons, and comets; and round which those smaller bodies move, in orbits and in periods depending upon their respective central or focal luminaries. The system to which our earth belongs, being that with which we are, of necessity, connected, is to us of the greatest importance: we shall, therefore, here present a description of its principal bodies, according to the latest and most accurate discoveries.

The SUN, which is placed in the centre of gravity of the whole system, and *nearly* in the common focus of the elliptical orbits of all the planets, is an immense spherical, or rather spheroidal body, whose mean diameter is about 110 times that of the earth, and its magnitude, therefore, about 133,000 times that of the terrestrial spheroid. It has two motions, namely, one of a revolution about the common centre of gravity of all the bodies in the system (which centre is a point usually within its own body); and the other, one of a rotation on its own axis, ascertained by tracing the appearance and disappearance of the spots on its disk, and occupying 25½ of our days.

To us this luminary appears to move irregularly in an elliptical orbit; but this is an illusion arising from the circumstance that the planet which we inhabit has actually a periodical revolution in such an orbit round the Sun, placed in one of its foci. Hence it happens that while the Sun *appears* to be passing through certain signs of the zodiac, as Aries, Taurus, Gemini, &c. our earth is really moving through the opposite signs, Libra, Scorpio, Sagittarius.

The spots on the Sun are very variable, both as to magnitude and continuance. Some of them are com-

puted to be four or five times as large as the surface of the earth. Sometimes they diminish in magnitude; at others, they disappear all at once before they reach the edge of the disk; at others, new ones are perceived. Thus they present a perpetual irregularity; their period alone being fixed. Observations of these spots have led to some modifications as to the notions entertained respecting the nature of the body of the Sun. The antients thought it a body of fire; and some a body of gold in a state of fusion. Laplace imagines that the Sun is a mass of fire, subject to immense eruptions, after the manner of our volcanoes; on which hypothesis the spots would be vast cavities: from these, torrents of lava are thrown at intervals. Herschel, on the other hand, conceives that the Sun, so far from being fire, is a *habitable* body, like the earth, surrounded by an atmosphere almost entirely occupied by luminous clouds; and that these occasionally, when disturbed by winds, or other causes, permit the dark nucleus of the Sun to be seen through them, thus forming the solar spots. These spots are almost all comprised in a zone of the Sun's surface, whose breadth, measured on a solar meridian, never goes farther than about 30″ from its equator.

Bouquer satisfied himself, by many careful observations, that the light emitted by the Sun comes with more intenseness from the centre than from near the edge of the disk; and as this effect is contrary to that which ought to result from the spherical shape of the luminary, it is manifest that for some reason the light near the edges must be in part extinct. This suggests to some a reason for concluding that the Sun is surrounded by an immense atmosphere, which in some measure enfeebles its native light, but more towards the edges, where it is traversed obliquely by the rays: just as our atmosphere diminishes the brilliancy of the stars, and especially about their rising and setting.

This solar atmosphere has been proposed again as a mean for explaining that beautiful white light which is seen a little before the Sun's rising, and a little after its setting, and which is called the *zodiacal light*. Its translucency is such, that very small stars may be seen through it. Laplace, contemplating the lenticular form of this phenomenon, and its extent, thinks that it may, without hesitation, be ascribed to the solar atmosphere. His explication may be seen in his *Système du Mond*, liv. iv, chap. 9. It would not consist with our purpose, or our limits, to detail it here.

The Naturalist's Diary.

Now January o'er the northern world
His fickle reign displays. A savage train
His steps pursue, as o'er the harassed fields
He stalks; benumbing frost, chill sleet and hail,
Hurling the stony show'r and sweeping storm.

WINTER, to an inattentive eye, presents nothing, as it were, but the creation in distress: the orchards are stripped of their golden fruit; and harmony is extinct in the groves, now bending with the snow, 'their beauty withered, and their verdure lost.' Yet, when we explore these dreary scenes, the mind is amply gratified in the contemplation of the various phenomena peculiar to this inclement season. Winter, ushered into existence by the howling of storms and the rushing of torrents, manifests, not less than the more pleasing seasons of the year, the wisdom and goodness of the great Creator. Were there no winter, neither the spring, nor summer, nor autumn, would display such a variety of beauties; for the earth itself would lose those rich stores of nourishment and fertility, to which even the winter so copiously contributes.

The most intense cold is usually felt in the month of January; and the weather is either bright and dry, with frost; or foggy, with much snow:—

> Thro' the hushed air the whitening show'r descends,
> At first thin-wav'ring; till, at last, the flakes
> Fall broad, and wide, and fast, dimming the day
> With a continual snow.

Snow is formed by the freezing of the water in clouds. It differs from the particles of hoar-frost, in being crystallized; for if we examine a flake of snow by a magnifying glass, the whole of it will seem composed of fine shining spicula, or points, diverging like rays from a centre. As the flakes fall down through the atmosphere, they are continually joined by more of these radiated spicula; and thus increase in bulk, like the drops of rain or hailstones. Snow, although it seems to be soft, is really hard, because it is true ice. It seems soft, because at the first touch of the finger, upon its sharp edges or points, they melt; or, they would pierce the finger like so many lancets. The whiteness of snow is owing to the small particles into which it is divided; for ice, when pounded, will become equally white.

But snow is not to be considered merely as a curious and beautiful phenomenon. Besides defending vegetables from the intense cold of the air, and piercing winds, it moistens and pulverizes the soil which has been bound up by the frost; and, as its water has a tendency to putrefaction, it seems, on many accounts, to be admirably fitted to promote vegetation. Another reason of the usefulness of snow, has been suggested by Mr. Parkes. Fur and down afford warm clothing, in consequence of the air they infold within them; atmospheric air being a non-conductor of heat. 'Hence it is that the carpet which covers the earth in winter, is spread out by nature with so light a hand, that it might hold an abundance of atmospheric air within its interstices, to preserve the warmth of those

innumerable tribes of vegetables which it is destined to protect.'

Ice is composed of a number of needle-like cystals, united to each other; and, the space between these being greater than between the particles of water, this liquid, when frozen, though it is not heavier, yet it occupies more space than before. From this principle of expansion, water-pipes often burst, and hoops fly off from barrels, during an intense frost. To this cause may be attributed the annual diminution of the bulk and height of lofty mountains. The different crevices being filled with water in the summer, this water becomes frozen in the winter; and, by the power of expansion, rolls down vast masses of rock or earth into the neighbouring valleys. By the same operation, the clods of ploughed fields are loosened, and rendered fit for the work of the husbandman.

The inclemency of the season compels the numerous tribes of birds to quit their retreats in search of food. The redbreast[1] (*sylvia rubecula*), the only bird that confides in man, begins to sing. Thomson's often quoted but beautiful description of his annual visit we cannot suppress:—

> Half afraid, he first
> Against the window beats; then, brisk, alights
> On the warm hearth; then, hopping o'er the floor,
> Eyes all the smiling family askance,
> And pecks, and starts, and wonders where he is:
> Till more familiar grown, the table-crumbs
> Attract his slender feet[2].

About the beginning of the month, larks (*alauda*

[1] This bird is called Tomi Liden, about Bornholm; Peter Ronsmad, in Normandy; and Thomas Gierdet, in Germany.

[2] or, fearlessly, lights down
Upon the basking sheep-dog's glossy fur;
Till chance the herd-boy, at his supper mess,
Attract his eye, then on the milky rim
Brisk he alights, and picks his little share. GRAHAM.

arvensis) congregate, and fly to the warm stubble for shelter; and the nuthatch (*sitta europæa*) is heard.—The shelless snail or slug (*limax*) makes its appearance, and commences its depredations on garden plants and green wheat: the body of this creature being covered over with a slimy substance, it can endure the cold much better than the shell-snail. The missel-thrush (*turdus viscivorus*) begins its song, which is very fine, often with the new year, sitting on the summit of a high tree, in blowing showery weather; whence the inhabitants of Hampshire call it the storm-cock. The hedge-sparrow (*sylvia modularis*), and the thrush (*turdus musicus*) begin to sing. The titmouse (*parus*) pulls straw out of the thatch, in search of insects; linnets (*fringilla linota*) congregate; and rooks (*corvus frugilegus*) resort to their nest trees.

The house-sparrow (*fringilla domestica*) chirps; the bat (*vespertilio*) appears; spiders shoot out their webs; and the blackbird (*turdus merula*) whistles. The fieldfares, red-wings, skylarks, and titlarks, resort to watered meadows for food, and are, in part, supported by the gnats which are on the snow, near the water. The titlark wades up to its belly in pursuit of the pupæ of insects, and runs along upon the floating grass and weeds. The tops of tender turnips and ivy-berries afford food for the graminivorous birds, as the ringdove, &c.

> Amid the leafless thorn, the merry *wren*[1],
> When icicles hang dripping,——
> Pipes her perennial lay: e'en when the flakes,
> Broad as her pinions, fall, she lightly flies
> Athwart the shower, and sings upon the wing.

The skylark sings[2]; earthworms lie out on the

[1] The *silvia troglodytes* braves our severest winters, which it contributes to enliven by its sprightly note. It continues its song till late in the evening, and not unfrequently during a fall of snow.

[2] Nothing can be more pleasing than to see the lark warbling upon the wing; raising its note as it soars, until it seems

ground; and the shell-snail (*helix nemoralis*) appears. The chaffinch (*fringilla cœlebs*) sings; jackdaws repair to the tops of churches; and the grey and white wagtail (*motacilla boarula* and *alba*) appear. Broods of these birds will flit round cows while feeding in moist pastures, approach their noses, and even go under their bellies in search of insects. Snipes, woodcocks, herons, wild ducks, and other waterfowl, retire from the frozen marshes to streams that are still open; and, as the cold strengthens, sea-birds come up the rivers in quest of food.

> Be careful now, ye swains, your tender flocks
> To shield from biting storms, from flooding rain,
> And all the ills of cold disastrous night.

The farmer exerts all his care in tending the domestic cattle. Cows can scarcely pick out any grass, and depend chiefly on hay for support: early lambs and calves are housed, and watched with almost paternal solicitude. The bleating charge should be left, at night,

> Near where the haystack lifts its snowy head;
> Whose fence of bushy furze, so close and warm,
> May stop the slanting bullets of the storm.

—

> or, if no *snow* is seen,
> Deep goes the frost, till ev'ry root is found
> A rolling mass of ice upon the ground.
> No tender ewe can break her nightly fast,
> Nor heifer strong begin the cold repast,
> Till *Giles* with pond'rous beetle foremost go,
> And scatt'ring splinters fly at ev'ry blow;
> When pressing round him, eager for the prize,
> From their mixt breath warm exhalations rise.
>
> BLOOMFIELD.

Hares, impelled by hunger, find their way into our gardens, to browse on the cultivated vegetables; and

lost in the immense heights above us; the note continuing, the bird itself unseen; to see it then descending with a swell as it comes from the clouds, yet sinking by degrees as it approaches its nest, the spot where all its affections are centered—the spot that has prompted all this joy.—GOLDSMITH.

rabbits enter plantations, and commit great havoc by stripping trees of their bark. The sharp-eyed fox steals from the wood, and, rendered bold by famine, make his incursions into the henroost and farm-yard[1]. The cold-blooded animals, as the frog, snake, and lizard, are quite benumbed by the cold, and so remain till the approach of warm weather. The dormouse, marmot, &c. take their winter-sleep; while the squirrel and the field-mouse subsist, in their retreat, upon the provision which they have laid up during the autumn.

The flowers of the rosemary (*rosmarinus officinalis*) begin to open. This shrub has ever been treated with great respect, for its efficacy in comforting the brain and strengthening the memory; which has made rosemary an emblem of fidelity in lovers. It was, accordingly, worn at weddings; and, perhaps, on the same principle, at funerals; on which latter occasions, in some parts of England, it is still distributed among the company, who frequently throw the sprigs into the grave along with the corpse[2]. Rosemary is a prin-

[1] The weasel and the polecat may be reckoned among the rural depredators; but we are, happily, exempted from the ravages of the wolf,

Cruel as death, and hungry as the grave;
Burning for blood, bony, and ghaunt, and grim!

[2] Sweet scented flower! who art wont to bloom
On January's front severe,
And o'er the wintery desert drear
To waft thy waste perfume!
Come, thou shalt form my nosegay now,
And I will bind thee round my brow;
And, as I twine the mournful wreath,
I'll weave a melancholy song,
And sweet the strain shall be, and long,
The melody of death.

Come, funeral flow'r! who lov'st to dwell
With the pale corse in lonely tomb,
And throw across the desert gloom
A sweet decaying smell;

cipal ingredient in what is known by the name of Hungary water; and the herb is taken as tea by many persons for the headach, and disorders called nervous.

The winter aconite (*helleborus hiemalis*), and the bear's foot (*h. fœtidus*), are in flower about the middle of the month; the mezereon (*daphne m.*) 'breathes mild its early sweets;' and the red-dead-nettle (*lamium purpureum*) flowers under the shelter of southern hedges. The snowdrop (*galanthus nivalis*) seems on the point of blowing; the common creeping crowfoot (*ranunculus repens*) is in flower; and the crocus, if the weather be mild, appears above ground. Ivy casts its leaves; the catkin, or male blossom of the hazel (*corylus avellana*), unfolds; the flowers of the holly (*ilex aquifolium*) begin to open; and the leaves of the honeysuckle (*lonicera periclymenum*) are quite out. Towards the end of January, the daisy (*bellis perennis*) is in full bloom.

In this month, the farmer carries out manure to his fields, and repairs quickset hedges; taking advantage of the dry and hard ground, during frost. The barn resounds with the flail, barley being now thrash-

---

Come, press my lips, and lie with me
Beneath the lowly alder tree;
And we will sleep a pleasant sleep,
And not a care shall dare intrude,
To break the marble solitude,
So peaceful, and so deep.

And, hark! the wind-god, as he flies,
Moans hollow, in the forest-trees,
And, sailing on the gusty breeze,
Mysterious music dies.
Sweet flower! that requiem wild is mine;
It warns me to the lonely shrine,
The cold turf altar of the dead:
My grave shall be in yon lone spot,
Where, as I lie by all forgot,
A dying fragrance thou wilt o'er my ashes shed.

KIRKE WHITE.

ed for malting. He lops forest-trees, and cuts timber for winter use.

> The woodman, urgent, plies his axe;
> The copse resounds with the repeated lapse
> Of boughs.

About the end of the month, in dry weather, peas and beans are sown, and vetches for seed or fodder. Hogs are killed for bacon, and beef and hams are smoked.

Shooting is a favourite amusement at this season of the year; other sports, also, are resorted to, when the weather permits.

> In giddy circles, whirling variously,
> The *skater* fleetly thrids the mazy throng,
> While smaller wights the *sliding* pastime ply.

But, in these hazardous exercises, we should remember the poet's advice, and

> Trust not *incautiously* the smooth expanse;
> For oft a treach'rous thaw, ere yet perceived,
> Saps, by degrees, the solid-seeming mass.

The winter of England, however, allows but few of those sports which continue for so long a time in more northerly regions, where

> Eager, on rapid sleds,
> Their vigorous youth in bold contention wheel
> The long-resounding course.

The *ice-hills* of St. Petersburgh, during the carnival, are well deserving of notice. Every ice-hill is composed of a scaffold, having steps on one side for ascending it; and, on the opposite side, a steep inclined plane covered with large blocks of ice, consolidated together by pouring water repeatedly from the top to the bottom. Men, as well as women (the latter, however, only of the lower orders), in little low sledges, descend, with amazing velocity, this steep hill; and, by the momentum acquired by this descent, are impelled to a great distance, along a large field of ice carefully swept clear of snow for that purpose, which brings them to a

second hill; by the side of which they alight, take their sledge on their back, and mount it by the steps behind, as they had done the former. Some young people venture to ascend the dangerous precipice in skates.

The *ice-palace* of Anne, Empress of Russia, is an eminent instance of the wonders that may be produced by this frozen liquid. It was built on the banks of the Neva, in the year 1740, and was constructed of hugh quadrates of ice hewn in the manner of freestone. The edifice was fifty-two feet in length, sixteen in breadth, and twenty in height. The walls were three feet thick. In the several apartments were tables, chairs, beds, and all kinds of household furniture of ice. In front of the palace, besides pyramids and statues, stood six cannons carrying balls of six pounds weight, and two mortars, of ice. From one of the former, as a trial, an iron ball with only a quarter of a pound of powder was fired off. The ball went through a two-inch board at sixty paces from the mouth of the cannon; and the piece of ice-artillery, with its carriage, remained uninjured by the explosion. The illumination of the ice-palace, at night, had an astonishingly grand effect.—*See Tooke's View of the Russian Empire*, vol. i, pp. 44, 45.

The following very curious circumstance is recorded by Captain Monk, who was deputed by Christian IV, King of Denmark, to attempt the discovery of a north-east passage to China. He wintered on the shore of Hudson's Bay, in the year 1619; and relates that the cold was so intense, that neither *beer*, *wine*, nor *brandy*, could resist it. These were all frozen, and the vessels which contained them were split into pieces; and, before they could use the liquors, they were obliged to hew them with hatchets, and dissolve them by fire. Virgil speaks of *hewing wine*, in his description of a Scythian winter;—'*cædunt que securibus humida vina.*'

February.

FEBRUARY, according to some, is derived from *Februa*, a feast held by the Romans in this month in behalf of the manes of the deceased; when sacrifices were performed and the last offices paid to the shades of the defunct. Others assert that this month takes its name from *Februa*, an epithet given to Juno, as the goddess of purification. Near the emblematical representation of February is the sign *Pisces*. The Saxons 'called February *sprout-kele*, by kele meaning the kele-wurt which we now call the colewurt, the greatest pot-wurt in time long past that our ancestors used, and the broth made therewith was thereof also called kele; for before we borrowed from the French the name of potage, and the name of herbe, the one in our owne language was called kele, and the other wurt; and as this kele-wurt, or potage-hearbe, was the chiefe winter-wurt for the sustenance of the

husbandman, so it was the first hearbe that in this moneth began to yeeld out wholsome young sprouts, and consequently gave thereunto the name of *sproutkele.*'—(*Verstegan*, p. 59.)

Shakspeare, in allusion to this month, says,

> You have such a *February* face,
> Full of frost, of storm, and cloudiness.

Remarkable Days.

2.—PURIFICATION OF THE BLESSED VIRGIN MARY.

THIS festival is held to commemorate the *Presentation of Christ* in the Temple; for it was a precept of the Mosaic law, that every first-born son should be holy unto the Lord. They were to attend on the *service* of the *Temple* or *Tabernacle*, or to make an offering of money, or a sacrifice. The mother also was obliged to separate herself forty days from the congregation after the birth of a male, and eighty after a female; and then was to present a *lamb*, if in good circumstances, or a *pair of pigeons*, if poor. And all these ceremonies were complied with after the birth of our Saviour. This festival is of high antiquity, and the antient Christians observed it by using a great number of lights; in remembrance, as it is supposed, of our blessed Saviour's being declared by *Simeon*, to be a light to lighten the Gentiles. This practice continued in *England* till the second year of Edward the Sixth, when Archbishop *Cranmer* forbade it by order of the then privy council. And hence the name of Candlemas Day. The *Greeks* call this festival Hypante, which signifies the *meeting*, because *Simeon* and *Anna* met our Lord in the Temple on this day.

The candles carried about on this day were *blessed* by the priests, as Hospinian[1] tells us, who gives the

[1] The original is in Latin, and commences thus:—'*Domine Jesu, benedicus, obsecro, &c. &c.*'

following form of prayer on this occasion: 'O LORD JESU, I beseech thee, that thou wouldst bless this thy CREATURE OF WAX, and grant it thy heavenly benediction, by the power of thy holy cross; that as it was a gift to man, by which the darkness might be driven away, so now it may be endowed with such virtue, by the sign of the HOLY CROSS, that, wheresoever it is lighted and placed, the evil spirit may tremble, and, with his servants, be in such terror and confusion, as to fly away from that habitation, and no more vex and disturb thy servants.' This day is called 'Christ's Presentation,' 'the holiday of Saint Simeon,' and, in the north of England, the 'Wives' Feast Day.' At Rippon, on the Sunday before Candlemas Day, the Collegiate Church is still one continued blaze of light all the afternoon, an immense number of candles being burnt before it.

The following stanzas, descriptive of the ceremonies formerly observed on Candlemas, and the eve of that day, are taken from *Herrick's Hesperides*:—

FOR CANDLEMASSE EVE.

Down with the *rosemary* and *bayes*,
  Down with the *misletoe;*
Instead of *holly*, now upraise
  The greener *box* (for show).

The *holly* hitherto did sway,
  Let *box* now domineere;
Until the dancing Easter-day,
  Or Easter's Eve appear.

Then youthful box, which now hath grace
  Your houses to renew,
Grown old, surrender must his place
  Unto the crisped *yew*.

When yew is out, then *birch* comes in,
  And many flowers beside;
Both of a fresh and fragrant kinne,
  To honour Whitsontide.

Green *rushes* then, and sweetest bents
  With cooler oken boughs,
Come in for comely ornaments,
  To re-adorn the house.

Thus times do shift, each thing its turn does hold;
New things succeed, as former things grow old.

FOR CANDLEMASSE DAY.

Kindle the Christmas brand, and then,
Till Sunne set, let it burne;
Which quencht, then lay it up agen
Till Christmas next returne.

Part must be kept wherewith to teend
The Christmas log next yeare;
And, when 'tis safely kept, the FIEND
Can do no mischiefe (there.)

End now the white loafe and the pye,
And let all sports with Christmas dye.

3.—SAINT BLASE.

He was Bishop of Sebaste, in Armenia, and suffered martyrdom in 316, under the persecution of Licinius, by command of Agricolaus, governor of Cappadocia and the Lesser Armenia. Blase is the principal patron of Ragusa, and also of the woolcombers, who still keep a solemn guild at Norwich in memory of their tutelar saint.

5.—SAINT AGATHA.

'The cities of Palermo and Catana dispute the honour of her birth: but they do much better, who, by copying her virtues, strive to become her fellow citizens in heaven.' *(Butler.)* She suffered martyrdom under Decius in the year 251. Agatha was honourably descended, and very beautiful. Her personal charms soon attracted the notice of Quintianus, prætor or governor of the province, who, being unable to accomplish his base designs, ordered her to be scourged, and then imprisoned, for not worshipping the Pagan deities. After which, still persisting in the faith, she was put to the rack, burnt with hot irons, and had her breasts cut off. Being remanded back to prison, Agatha had several divine comforts afforded her; but the prætor sending for her again, almost exhausted by her tortures and wounds, she

prayed to God to receive her soul; with which petition she immediately expired.

6.—SEPTUAGESIMA SUNDAY.

The institution of this and the two following Sundays cannot be traced higher than the beginning of the sixth or the close of the fifth century. 'When the words Septuagesima, Sexagesima, and Quinquagesima (seventieth, sixtieth, and fiftieth), were first applied to denote these three Sundays, the season of Lent had generally been extended to a fast of six weeks, that is, thirty-six days, not reckoning the Sundays, which were always celebrated as festivals. At this time, also, the Sunday which we call the first Sunday in Lent was styled simply *Quadragesima*, or the fortieth, meaning, no doubt, the fortieth day before Easter. Quadragesima was also the name given to the season of Lent, and denoted the quadragesimal or forty days' fast. When the three weeks before Quadragesima ceased to be considered as weeks after the Theophany (or Epiphany), and were appointed to be observed as a time of preparation for Lent, it was perfectly conformable to the ordinary mode of computation to reckon backwards, and, for the sake of even and round numbers, to count by decades.' (*Shepherd.*)

13.—SEXAGESIMA SUNDAY. *See* SEPTUAGESIMA.

14.—SAINT VALENTINE.

Valentine was an antient presbyter of the church: he suffered martyrdom in the persecution under Claudius II, at Rome. Being delivered into the custody of a man named Asterius, one of whose daughters was afflicted with blindness, he restored the use of her sight; and, by this miracle, converted the whole family to Christianity. They afterwards suffered martyrdom. Valentine, after a year's imprisonment at Rome, was beaten with clubs, and then beheaded, in the *Via Flaminia*, about the year 270.

'The custom of choosing *Valentines* is of very long standing, and, like many others of a popular nature, is no more than a corruption of something similar that had prevailed in the times of Paganism. At the celebration of the Roman *Lupercalia*, amidst a variety of ceremonies, it was the custom to put the names of several young women into a box, from which they were drawn by the men, as chance directed. The pastors of the early Christian church, who endeavoured to eradicate the vestiges of Pagan superstition, substituted, in the present instance, the names of particular saints, instead of those of the women; and, as the festival of the *Lupercalia* had commenced about the middle of February, they appear to have chosen Saint Valentine's Day for celebrating the new feast. Another opinion on the origin of choosing Valentines, is formed on a tradition among the common people, that, at this season of the year, birds choose their mates, a circumstance that is frequently alluded to by our poets; yet this seems to be a mere poetical idea, borrowed, in all probability, from the practice in question.

'Madame Royale, the daughter of Henry IV, of France, built a palace near Turin, which was called the *Valentine*, on account of the great veneration in which the saint was held in that country. At the first entertainment given there by the princess, who was naturally of a gallant disposition, she directed that the ladies should choose their lovers *for the year*, by lots. The only difference with respect to herself was, that she should be at liberty to fix on her own partner. At every ball during the year, each lady received from her gallant a nosegay; and at every tournament, the lady furnished his horse's trappings, the prize obtained being her's.'—(*Douce's Illustrations of Shakspeare*, vol. ii, p. 252.)

In the *Connoisseur*, No. 56, there is a curious notice of some Valentinian ceremonies: a female correspondent of Mr. Town's says, 'I got five bay-

leaves, and pinned four of them to the four corners of my pillow, and the fifth to the middle; and, then, if I dreamt of my sweetheart, Betty said we should be married before the year was out. But to make it more sure, I boiled an egg hard, and took out the yolk, and filled it up with salt; and when I went to bed, eat it shell and all, without speaking or drinking after it, and this was to have the same effect with the bay-leaves. We also wrote our lovers' names upon bits of paper, and rolled them up in clay, and put them into water; and the first that rose up was to be our Valentine.'

Some rural ceremonies on the morning of this day are thus described by Gay in his fourth Pastoral:—

Last Valentine, the day when birds of kind
Their paramours with mutual chirpings find,
I early rose, just at the break of day,
Before the Sun had chased the stars away;
Afield I went, amid the morning dew,
To milk my kine (for so should huswives do)
The first I spied, and the first swain we see,
In spite of fortune, shall our true love be.

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[1] The following elegant *jeu d'esprit* is copied, by Mr. Brand, from 'Satyrs of Boileau Imitated, &c.' 8vo. Lond. 1696.

To Dorinda, on Valentine's Day.

Look how, my dear, the feathered kind,
By mutual caresses joined,
Bill, and seem to teach us two,
What we to love and custom owe.

Shall only you and I forbear
To meet and make a happy pair?
Shall we alone delay to live?
This day an age of bliss may give.

But, ah! when I the proffer make,
Still coyly you refuse to take;
My heart I dedicate in vain;
The too mean present you disdain.

Yet since the solemn time allows
To choose the object of our vows;
Boldly I dare profess my flame,
Proud to be yours by any name.

The usual celebration of this day, with young persons, is well known: we shall not attempt to describe,

> Soon as grey morn invests yon eastern hill,
> What perturbations youthful bosoms fill,
> What throbs, what strange anxieties are known,
> While doubt remains where LOVE shall fix his throne;

but proceed to observe, that the practice of sending Valentines or letters on this day, either in verse or in prose, does not seem fraught with any great mischief; and so long as it serves to augment his Majesty's revenues, and innocently to amuse young ladies and gentlemen, we see no reason for discontinuing the custom. The contents of these annual *billets-doux* are, generally, of a very harmless description, being chiefly composed of a delightful mixture of 'hearts and darts,' 'kisses and blisses,' &c. &c. The divine NONSENSIA is usually invoked on this occasion, and the verses are, as might be expected, 'full of the goddess.'

The author of the 'Mock Heroic,' just quoted, concludes his poem with these useful admonitions, which we heartily recommend to the serious attention of the fair sex:—

> Let virtue, honour, sense, and truth unite,
> Whate'er the *fortune*, VALENTINE is right:
> Absent these qualities—thus ends the song,
> Whate'er the *fortune*, VALENTINE is wrong[1].

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[1] To complete our *Valentiniana*, we shall insert a spirited invocation of this saint, which appeared in the Gent. Mag. for 1736, vol. vi, p. 107.

> Haste, friendly SAINT! to my relief,
> My heart is stol'n, help! stop the thief!
> My rifled breast I searched with care,
> And found ELIZA lurking there.
>
> Away she started from my view,
> Yet may be caught, if thou pursue;
> Nor need I to describe her strive,
> The fairest, dearest, maid alive!
>
> Seize her—yet treat the nymph divine
> With gentle usage, VALENTINE!

20.—QUINQUAGESIMA SUNDAY. *See* SEPTUAGESIMA.

22.—SHROVE TUESDAY.

This day is also called 'Fastern's E'en' and Pancake Tuesday. *Shrove* is the preterite of *shrive*, an antiquated word which signifies to hear or make confession. On this day it was usual for the people to *confess*, that they might be the better prepared for the observation of the ensuing season of penitence, and for receiving the sacrament at Easter. It was afterwards converted into a day of idle sports and amusements; and within these few years, in many parts of England, its anniversary was distinguished by riot and drunkenness, by bull-baiting, cock-fighting, and such other diversions as were calculated to promote cruelty, inhumanity, and every thing the most opposite to the virtues which it was the intention of the church to teach and encourage.

The custom of frying *pancakes* on this day is still retained in many families throughout the kingdom, but we think the practice not likely to last another century. In the *north*, the Monday preceding Shrove Tuesday is called *Collop Monday*; eggs and collops (slices of bacon) composing an usual dish at dinner on this day.

At Newcastle-upon-Tyne (says Mr. Brand) the great bell of St. Nicholas's church is tolled at twelve o'clock at noon on Shrove Tuesday; shops are immediately shut up, offices closed, and all kind of business ceases; a sort of little carnival ensuing for the remainder of the day.

The Popish *Carnival* commences from Twelfth-day, and holds till Lent. At Venice, during the carnival time, Saint Mark's Place is the grand scene of riot and folly, where mountebanks and various

---

Then tell her, she, for what was done,
Must bring *my heart*, and give *her own*.

Mrs. Robinson has some beautiful 'Stanzas addressed to my Valentine.' See her Poems, vol. ii. See also Gent. Mag., vol. lxxvii, part i, p. 256.

other impostors are allowed to erect their stages, and to practise on the credulity of the crowds who assemble round them. Feasts, balls, operas, masquerades, &c. &c. are given in this season. The word *carnival*, of the Italian *carnavale*, is derived by *Du Cange* from *carn-a-val*, because the flesh is then put into the pot in order to make amends for the season of the absence ensuing. Others trace the word to the Latin *carni vale*, farewel to flesh.

The sport of *fighting cocks* in pitched battles first appears upon record in the reign of Henry II. During subsequent reigns this sport became general; and, to the disgrace of our country, was countenanced by royal favour during the reigns of James I. and Charles II. If the Romans set us the example in devising these sports, it must be confessed, we have 'bettered the instruction.' For to English refinement and ingenuity may be ascribed the noble invention of the Gaffle or Spur; by the aid of which, the gallant combatants of the cockpit mangle, torture, and destroy each other; no doubt to the great satisfaction and delight of admiring spectators. Another instance of our barbarous ingenuity must not be omitted. No other nation but the British has contrived to put in practice the *Battle Royal*, and the *Welsh Main*:—In the former, the spectator may be gratified with the display of numbers of game-cocks, destroying each other at the same moment without order or distinction. In the latter, these courageous birds are doomed to destruction in a more regular but not less certain manner. They fight in pairs (suppose 16 in number), and the two last survivors are then matched against each other; so that out of 32 birds, 31 must be necessarily slaughtered.

Throwing at Cocks, formerly much practised on Shrove Tuesday, is another specimen of unmeaning brutality confined solely to our own country. After being familiarised to the barbarous destruction of this courageous bird in the cockpit, it was only advanc-

ing one step farther in the progress of cruelty, to fasten this most gallant animal to a stake, in order to murder him piece-meal. This detestable barbarity has declined as our manners have become more polished and humane; but the strong hand of the law was obliged to interfere in many places to hasten its abolition. The cruel treatment of the animal race might well lead an ingenious foreigner to remark, when describing our popular diversion, as follows:—'The women of Rome beheld barbarities and murders in cold blood; but the boxing matches, the bull-baitings, cock-fightings, and the numerous attendance of both sexes at public executions, indicate that there is at least a remnant of Roman manners, and the taste of those times, left in England.'

23.—ASH WEDNESDAY.

Formerly Lent began on the Sunday after *Quinquagesima* i. e. our first Sunday in Lent, and ended at Easter, containing in all 42 days; and subtracting the six Sundays which are not fasts, there remained only 36 fasting-days, the tenth part of 360, the number of days in the antient year, then considered as a tythe of the year consecrated to God's service. To these 36 fasting-days, however, of the *Old Lent*, Gregory added four days more, to render it equal to the time of our Saviour's fasting, causing it to begin on *Ash Wednesday*, three days after *Quinquagesima*; and thus it has remained ever since. Lent is not of apostolic institution, nor was it known in the earlier ages of the Christian church.

This day was formerly called *Caput Jejunii*, the head of the fast, and *Dies Cinerum*, or Ash Wednesday. The latter appellation is derived from the following custom in the discipline of the antient church: On the first day of Lent the penitents were to present themselves before the bishop, clothed in sackcloth, with naked feet, and eyes fixed upon the ground, in the presence of the principal part of the clergy belonging to his diocese, who were to be judges

of the sincerity of their repentance. When these were introduced in procession into the church, the bishop and the clergy, all in tears, repeated the seven penitential psalms. Then rising from prayers, they threw ashes upon them, and covered their heads with sackcloth; declaring to them with deep sighs, that as Adam was thrown out of Paradise, so they must be driven from the church. The bishop now commanded the proper officers to turn them out of the church-doors; and all the clergy followed, repeating that curse upon Adam, *in the sweat of thy brows shalt thou eat thy bread.* This penance was renewed on the Sunday following, when the sacrament was administered. The Protestant church substitutes for this severe discipline the service called the *Comination*, or a *denunciation of God's anger and judgments against sinners*;—a service which was formerly read on such other days in Lent as the ordinary should think proper, but at present it is performed on Ash-Wednesday only.

In this season they who lived in populous cities, or in the vicinity of the greater churches, held religious assemblies, and had sermons preached every day. The most antient manner of observing Lent was *to refrain from all food till the evening:* for the change of diet, as of flesh for fish, was not, by the antients, accounted a fast. Their only refreshment was a moderate supper, and they partook indifferently of animal or other food. In subsequent ages, the use of flesh and wine was generally prohibited. Some abstained from all creatures which once had life; some from all fish; others ate fowls as well as fish; others abstained from eggs, milk, and fruit, and ate only pulse, roots, or bread; others abstained even from these, and again others indulged themselves with the addition of a little salt and water to their bread. Frequenting places of public amusement, the use of the bath, and various pleasures, at other times accounted innocent, were forbidden during Lent.

Many surprising instances of *extraordinary fasts* are recorded by the early ecclesiastics. Saint Gregory Nazianzen assures us, that, in his time, several *solitaires* spent twenty days and nights together without food, and that he personally knew one, in his own diocese, who practised this rigorous fast. *Eusebius*, a celebrated abbot in Syria, used commonly to abstain from all food for three or four days together; and when a youthful monk, ate but once a week. Equally strange instances of *habitual abstinence* are also related. Paul, the first hermit, lived in a palm-tree for thirty years, his food and clothes being given to him; the former was composed of raw herbs and pulse, yet he attained the age of one hundred and thirteen years. At the early age of fifteen, *Saint Hilarion* abstained entirely from bread, and, for six years, his daily diet was limited to *fifteen figs*. For the next three years he ate lentils steeped in cold water; and from his 24th to his 27th year, lived on bread, salt, and water: from this time, till he attained his thirtieth year, he confined himself to wild herbs and roots; and during the five succeeding years, his daily allowance was *six ounces of barley bread*, and a small quantity of boiled herbs; to which he afterwards added, by way of luxury, a little *oil*; and thus he lived till he was sixty-three years old. He then retrenched his bread, and drank a liquid not much better than water, his whole meal never exceeding five ounces. Hilarion attained the age of eighty years; although he never ate till sunset, or made any difference in his fasts on account of his health. It were easy to multiply these examples, but as it would neither profit nor amuse our readers, we shall conclude this subject with Herrick's sensible directions for '*keeping the true Lent*.'

Is this a Fast, to keep
The Larder leane,
And cleane,
From fat of veales and sheep?

Is it to quit the dish
Of flesh, yet still
To fill
The platter high with fish?

Is it to faste an houre,
Or raged to go,
Or show
A down-cast look and sowre?

No; 'tis a Fast to dole
Thy sheaf of wheat,
And meat,
Unto the hungry soule.

It is to fast from strife,
From old debate,
And hate;
To circumcise thy life.

To show a heart grief-rent,
To starve thy sin,
Not bin;
And that's to keep thy Lent.

24.—SAINT MATTHIAS.

Matthias was, probably, one of the seventy disciples, and was a constant attendant upon our Lord, from the time of his baptism by St. John until his ascension. Upon the death of Judas, St. Peter recommended to the consideration of the Christians assembled at Jerusalem, the necessity of supplying this vacancy: and two were appointed; Joseph, called Barsabas, who was surnamed *Justus*, and Matthias. It was determined by lot in favour of the latter, who was accordingly numbered with the eleven apostles. Matthias employed the first years of his ministry in Judea; afterwards he travelled eastward, his residence being principally, according to St. Jerome, near the river Apsarus, and the haven Hyssus. Here he contiued for some time, but was at last murdered by the barbarous natives. The gospel and traditions published under his name are considered spurious.

27.—QUADRAGESIMA, *or*, FIRST SUNDAY IN LENT.

See SEPTUAGESIMA, p. 31.

Astronomical Occurrences.

Divisions of Time.

As the Sun is the most conspicuous body in our system, and as he appears to move regularly through the heavens, his motion has been fixed on as one of the best measures of time that is afforded to us by nature. By means of his apparent diurnal and annual revolutions, we obtain the two grand and important divisions of time, into days and years. By combining the revolution of the Sun and Moon, we embrace the larger intervals; and thence form an idea of those grand periods of time, which will be noticed hereafter.

In civil computations, a day is usually divided into twenty-four, or twice twelve, hours; reckoning from midnight to noon, and from noon to midnight: but an astronomical day is the interval between the noon on one day and that on the next, and on this principle the *Nautical Almanack* is constructed; but the *Connaissance des Tems*, a French work intended for the same purposes, viz. for the special use of practical astronomers and navigators, follows the usual course of reckoning by twice twelve hours, beginning their day at 19 at midnight. In England, then, the astronomical day is behind the common day 12 hours: thus, by the Nautical Almanack, the new Moon for February takes place on the 19th day, at 11 minutes past 19; but, in common reckoning, we say it occurs on the 20th day, at 11 minutes past 7 in the morning.

An astronomical day is the interval between two successive transits of the Sun's centre over the same meridian, and is divided into twenty-four hours, reckoned from one to twenty-four, without any interruption; so that what is called 9 o'clock in the morning of the 10th of February, by the civil or usual mode of reckoning, is denominated by astronomers Feb. the 9th, at 21 hours. In some parts of Italy, the clocks and watches are made to go from 1 to 24.

The Sun appears to go round the earth in twenty-four hours, and the fixed stars in nearly four minutes less, or in 23 h. 56 m. 4 s.; so that any given fixed star is found to gain 3 m. 56 s. upon the Sun every day, which amounts to one diurnal revolution in a year; and therefore in 365 days, as measured by the returns of the Sun to the meridian, there are 366 days, as measured by the return of any given fixed star to the meridian; the former of which are called *solar* days, and the latter *sidereal*. The difference between the solar and sidereal days is occasioned by the immense distance of the fixed stars; for the earth's orbit, though 190 millions of miles in diameter, is but as a point compared with that distance; and, therefore, any meridian of the earth will revolve from a fixed star, to that star again, in exactly the same time as if the earth had only a diurnal motion, and was to remain for ever in the same part of its orbit. This, however, is not the case with respect to the Sun; for, as the earth advances almost a degree eastward in its orbit in the same time that it turns eastward round its axis, or completes its diurnal revolution, whatever star passes over the meridian any day with the Sun, will pass over the same meridian the next day, when the Sun is 3 m. 56″ short of it. If the year contained exactly 360 days, as the ecliptic does 360 degrees, the Sun's apparent place would change a degree every day; and, in this case, the sidereal days would be just 4 minutes shorter than the solar ones.

The daily revolution of the earth, which is known to be uniform, is always completed, when any particular meridian is exactly parallel to the situation which it had at a certain time of the preceding day. For the same meridian can never be brought round from the Sun, to the Sun again, by one entire revolution of the earth upon its axis, but it will require as much more of another revolution, as is equivalent to the space that the earth has advanced in its orbit during that time; which is, at a medium, the 365th part of

a circle. So that, in 365 days, the earth will have turned 366 times round its axis; and therefore, as one complete rotation makes a *sidereal* day, in a year there will be a sidereal day more than there are solar days, be that number what it may.

It may be observed, that the regular return of the fixed stars to the meridian affords an easy method of determining whether our chronometers keep true time. For if, through a small hole in a window shutter, or other fixed object, it be observed at what time a given star disappears behind any building at a small distance; then if the same star disappears, the next night, 3 m. 56 s. sooner by the clock or watch, than it did the night before; and on the second night 7 m. 52 s. sooner, and so on, it is a proof that the instrument goes right; but if it does not observe this rule, it is evidently not accurate, and requires to be regulated. As the disappearing of a star is instantaneous, this rule may be depended on to half a second.

The following are the times of Sun-rising and setting at London for this month:—

1st.	Sun rises 27 m. past 7	Sun sets 33 m. past 4.
9th	- - - - 13 - - - - 7	- - - - 47 - - - - 4.
18th	- - - - 56 - - - - 6	- - - - 4 - - - - 5.

Equation of Time.—[See the month of January.] The following table will show what is to be added to the time pointed out on the dial, to obtain true or equal time for every 5th day of February:—

		m.	s.	
Tuesday, Feb. 1, to the time on the dial	ADD	13	56	to obtain true time by the clock.
Sunday, - - 6,		14	26	
Friday, - - 11,		14	35	
Wednesday, 16,		14	26	
Monday, - 21,		13	59	
Saturday, - 26,		13	16	

The Sun enters Pisces on the 19th, at 20 m. past 5 o'clock in the morning. Venus appears stationary on the 18th.

The Moon is full on the 4th, at 46 m. past 6 in the afternoon: it enters its last quarter on the 12th, at

45 m. past 4 in the morning: the preceding new Moon is at 11 m. past 7 in the morning of the 20th, and it enters its first quarter at 26 m. past 10 in the morning of the 27th. The time of the Moon's rising for the first five days after she is full, will be as follows, viz. on the

5th of February,	34 m. past	5	in the afternoon.
6th,	57	6	ditto.
7th,	14	8	ditto.
8th,	27	9	ditto.
9th,	36	10	ditto.

On the 1st day of this month the Moon will eclipse the star marked ν π in astronomical catalogues. The immersion will take place at 13 m. past 11 in the evening, when the star will be 7 minutes south of the Moon's centre; and the emersion will be at 13 m. past 12, the star being 8 m. south of the Moon's centre.

On the 12th day, the Moon will eclipse the star ν ♏. The immersion will happen at 18 m. past 2 in the morning, when the star is 7 m. north of the Moon's centre; and the emersion will take place at 16 m. past 3 in the morning, the star being 10 m. north of the Moon's centre.

At 20 m. past 5 in the morning of the 18th, Mercury will be in conjunction with the Sun. On the 24th, at 9 in the morning, Jupiter will be in opposition to that luminary.

The eclipses of Jupiter's first satellite for February, that are visible in London and its vicinity, are as follow, viz. the immersions take place on the

3d day,	at 42 m. past	2	o'clock in the morning.
4th,	11	9	evening.
10th,	36	4	morning.
11th,	5	11	evening.
18th,	58	12	evening.
20th,	26	7	evening.
26th,	6	5	morning.
27th,	35	11	evening.

VIEW OF THE SOLAR SYSTEM.

In our last month's observations on the Solar System, we have described some particulars relating to the Sun; we shall now continue the subject, acknowledging ourselves indebted chiefly to the discoveries of the indefatigable Dr. Herschel.

The Sun agrees with the fixed stars in many particulars; as in the property of emitting light continually, and in retaining constantly its relative situation with but little variation; and hence the Sun is considered as a fixed star comparatively near us, and the stars as suns at immense distances from the earth. The Sun, like many other stars, is supposed to have a progressive motion directed towards the constellation Hercules; and it revolves on its axis in 25 d. 10 h.; this axis being directed towards a point about half way between the pole star and Lyra, the plane of rotation being inclined something more than 7° to that in which the earth revolves. The direction of this motion is from west to east. All the rotations of the different bodies which compose the solar system, as far as they have been ascertained, are in the same direction, and likewise all their revolutions about the central bodies, excepting, perhaps, those of some of the comets, and those of one or two of the satellites of the Georgian planet. The time and direction of the Sun's rotation are ascertained by the change of the situation of the spots, which, we have already observed, are very frequently visible on his disk, and which some astronomers suppose to be elevations, and others excavations in the luminous matter covering the Sun's surface. M. Lalande supposes them to be parts of the solid body of the Sun, which, by certain agitations of the luminous ocean, with which he conceives the Sun to be surrounded, are left nearly or entirely bare. Dr. Herschel considers this ocean as consisting rather of a flame than of a liquid substance, and he attributes the spots to the emission of an æriform fluid,

not yet in combustion, which displaces the general luminous atmosphere, and which is afterwards to serve as fuel for supporting the process; hence he supposes the appearance of copious spots to be indicative of the approach of warm seasons on the surface of the earth, a theory which he has attempted, not very successfully, to maintain by historical evidence. The spots are usually surrounded by margins less dark than themselves, which are called shallows, and which are considered as parts of an inferior stratum, consisting of opaque clouds, capable of protecting the immediate surface of the Sun from the excessive heat produced by combustion in the superior stratum, and perhaps rendering it habitable to animated beings. To this theory of the illustrious Herschel, Dr. Young replies, if we inquire into the intensity of the heat which must necessarily exist wherever this combustion is performed, we shall soon be convinced that no clouds, however dense, could impede its rapid transmission to the parts below; besides, he adds, the diameter of the Sun is 111 times as great as that of the earth; and at its surface a heavy body would fall through no less than 450 feet in a single second; so that if every other circumstance permitted human beings to reside on it, their own weight would present an insuperable difficulty, since it would become thirty times as great as upon the surface of the earth, and a man of moderate size would weigh more than two tons.

But whatever becomes of these and other very ingenious and highly interesting speculations, it is evident upon all theories that the Sun is an eminent, large, and lucid planet, the first and only primary one belonging to our system. Its similarity to the other globes of the solar system, with regard to its solidity; its atmosphere; its surface diversified with mountains and valleys; its rotation on its axis, lead to the conclusion that it must be inhabited, like the other planets, by beings whose organs are adapted to the pecu-

liar circumstances of that vast globe. It will perhaps be objected, that, from the effects produced at 95 millions of miles, we may infer, that every thing must be scorched up at its surface. To this it is replied, that there are many facts in natural philosophy which show that heat is produced by the Sun's rays only when they act in a calorific medium: they are the cause of the production of heat by uniting with the matter of fire which is contained in the substances that are heated. On the tops of very high mountains, where clouds seldom come to shelter them from the direct rays of the Sun, regions of ice and snow are always found. Now, if the solar rays themselves conveyed all the heat that we find on this globe, it ought to be hottest where their course is the least interrupted. Add to this that our aëronauts all speak of the coldness of the upper regions of the atmosphere; and since, therefore, even on the earth, the heat of the situation depends on the readiness of the medium to yield to the impression of the solar rays, we have only to admit, that on the Sun itself the elastic fluids composing its atmosphere, and the matter on its surface, are of such a nature as not to be capable of any extensive affection of its own rays: and this seems to be proved by the copious emission of them; for if the elastic fluids of the atmosphere, or of the matter contained on the surface of the Sun, were of such a nature as to admit of an easy chemical combination with its rays, their emission would be very much impeded. Another fact in support of this theory is, that the solar focus of the largest lens, thrown into the air, will occasion no sensible heat in the place where it has been kept for a considerable time, although its power of exciting combustion, when proper bodies are exposed to it, should be sufficient to fuse the most refractory substances.

The way in which we have considered the Sun is of the utmost importance in its consequences. That stars are suns, can scarcely admit of a doubt. Their

immense distance would effectually exclude them from our view, if their light were not of the solar kind. Besides, the analogy may be traced much farther: the Sun turns on its axis; so do many of the fixed stars; perhaps, indeed, all; and this will account for their periodical changes. If stars then are suns, and suns inhabitable, we see at once what an extensive field for animation opens to our view.

Analogy may, indeed, induce us to conclude, that since stars appear to be suns, and suns, according to the common opinion, are bodies that serve to enlighten, warm, and sustain a system of planets, we may have an idea of the numberless globes that serve for the habitation of living creatures. But if these suns themselves are a sort of primary planets, we may see some thousands of them, at different times, with the naked eye, and millions with the help of telescopes; and, at the same time, the analogical reasoning still remains in full force with regard to the planets which these suns uphold and support.

The Sun is accompanied in his progressive motion among the fixed stars by eleven planetary bodies, of different magnitudes, revolving round him, from west to east, in orbits approaching to circles, and visible to us by means of the light which they receive from him. These are Mercury, Venus, the Earth, Mars, Juno, Pallas, Ceres, Vesta, Jupiter, Saturn, and the Georgian planet; which will be considered hereafter in their proper order.

The Naturalist's Diary.

As yet the trembling year is unconfirmed,
And winter oft at eve resumes the breeze.

In February, the weather, in England, is usually variable, but most inclined to frost and snow. The thermometer is often down below the freezing point,

but is generally found at noon between 36° and 46°; towards the end of the month it sometimes rises to 50°, or even 52° or 54°. The severe weather, generally, breaks up with a sudden thaw, accompanied by wind and rain; torrents of water pour from the hills, and the snow is completely dissolved. Rivers swell and inundate the surrounding country, often carrying away bridges, cattle, mills, gates, &c. and causing great injury to the farmer. But so variable is the weather in this month, that frequently 'frost again usurps the year.'

In the course of this month all nature begins, as it were, to prepare for its revivification. God, as the Psalmist expresses it, 'renews the face of the earth:' and animate and inanimate nature seem to vie with each other in opening the way to spring. About the 4th or 5th, the woodlark *(alauda arborea)*, one of our earliest and sweetest songsters, renews his note; a week after, rooks begin to pair, and geese *(anas, anser)* to lay; the thrush and the chaffinch sing; turkey cocks strut and gobble; the yellow hammer *(emberiza citrinella)* sings; and the green woodpecker *(picus viridis)* makes a loud noise.

Partridges *(tetrao perdix)* begin to pair; the house pigeon has young; field crickets open their holes; missel thrushes couple; and woods owls hoot:—gnats play about, and insects swarm under sunny hedges; frogs *(rana temporaria)* croak, and the stone-curlew *(otis œdicnemus)* clamours. By the latter end of this month, the raven *(corvus corax)* has generally laid its eggs, and begun to sit. Moles *(talpa europæus)* commence their subterraneous operations.—This animal makes its nest a little below the surface of the ground, forming a commodious apartment, where it prepares a warm bed of moss and herbage: from this there are several passages, in different directions, to which it can retreat, with its young ones, in case of danger; into these, likewise, it makes excursions in quest of food. In the act of forming its

tracks or *runs*, it throws up large heaps of mould, which are extremely injurious in meadows, grass lands, and cultivated grounds. Moles feed on worms, beetles, and the roots of plants.

The flowers of the crocus (*crocus vernus*) appear before the leaves are grown to their full length. The vernal and autumnal crocus have such an affinity, that the best botanists only make them varieties of the same *genus*. Yet the vernal crocus expands its flowers by the beginning of March at farthest, often in very rigorous weather, and cannot be retarded but by some violence offered: while the *autumnal* crocus, or saffron, alike defies the influence of the spring and summer, and will not blow till most plants begin to fade, and run to seed.

> Say, what impels, amid surrounding snow,
> Congealed, the crocus' flamy bud to glow?
> Say, what retards, amid the summer's blaze,
> Th' *autumnal bulb*, till pale, declining days?
> The God of Seasons, whose pervading pow'r
> Controls the sun, or sheds the fleecy show'r:
> He bids each flow'r his quick'ning word obey,
> Or to each ling'ring bloom enjoins delay. WHITE.

The barren strawberry (*fragraria sterilis*), the laurustinus (*viburnum tinus*), and the yew-tree (*taxus baccata*), are in flower. The elder-tree (*sambucus nigra*) begins to put forth its flower-buds, and the catkins of the hazel are very conspicuous in the hedges. The gooseberry bush (*ribes grossularia*) and the red currant (*ribes rubrum*) show their young leaves about the end of the month. Many plants appear above ground in February, but few flowers, except the snowdrop, are to be found. This 'icicle, changed into a flower,' is sometimes fully opened from the beginning of the month.

The husbandman is now eager to commence the work of ploughing, which important business is finished in this month, if the weather permit;—early potatoes are set, hedges repaired, trees lopped, and wet lands drained. Poplars, willows, osiers, and other aquatics, are planted.

March.

AMONG the Romans, March, from *Mars*, was the first month, and marriages made in this month, as well as in May, were accounted unhappy. 'March is drawn in tawny, with a fierce aspect, a helmet upon his head, to shew this moneth was dedicated to *Mars*, his father; the sign *Aries* in his right hand, leaning upon a spade; in his left hand almond blossomes and scients; upon his arm a basket of garden-seeds.' (*Peacham*, p. 418). The Saxons called March '*Lent-Monat*, that is, according to our now orthography, *Length-moneth*, because the dayes did then first begin in length to exceed the nights. And this moneth being by our ancestors so called when they received Christianity, and consequently therewith the antient Christian custome of fasting, they called this chiefe season of fasting, the fast of *Lenet*, because of the *Lenet-monat*, whereon the most part of the time of this fasting alwaies fell; and hereof it commeth that we now call it Lent, it being rather the fast of Lent, though

the former name of *Lenet monat* be long since lost, and the name of March borrowed in stead thereof.' (*Verstegan*, pp. 59, 60.)

March, various, fierce and wild, with wind-crackt cheeks,
By wilder Welshmen led, and *crowned with leeks*.

CHURCHILL.

Remarkable Days.

1.—SAINT DAVID.

SAINT DAVID, in Welsh *Dafydd*, was descended from the royal family of the Britons, being uncle to the great Arthur, and son of Xantus, prince of Ceretica, now Cardiganshire. Being ordained a priest, he retired into the Isle of Wight, and embraced an ascetic life; but after a long course of study, he emerged from his solitude, and preached the gospel to the Britons. He built a chapel at Glastonbury, and *founded twelve monasteries*, the principal of which was in the vale of Ross, near Menevia. He compelled all his monks to assiduous manual labour, and did not allow them any cattle to assist them in their agricultural work. They were never suffered to speak but on occasions of absolute necessity, and they never ceased to pray, at least mentally, during their labour. They returned late in the day to the monastery, to read, write, and pray. Their food was only bread and vegetables with a little salt, and they never drank any thing better than a little milk mingled with water. After their repast they spent three hours in prayer and adoration; then took a little rest, rose at cock-crowing, and continued in prayer till they went out to work. Their habit was of the skins of beasts. When any one partitioned to be admitted, he waited ten days at the door, during which time he was tried by harsh words, repeated refusals, and painful labours, that he might learn to die to himself. When he was admitted, he left all his worldly substance behind him,

for the monastery never received any thing on the score of admission. All the monks discovered their most secret thoughts and temptations to the abbot.

The Pelagian heresy springing up a second time in Britain, the bishops, in order to suppress it, held a synod, at Brevy in Cardiganshire, in the year 519, and Saint David was invited to this venerable assembly. At the close of the synod, St. Dubritius, the Archbishop of Caerleon, resigned his see to St. David, whose tears and opposition were only to be overcome by the absolute command of the synod; which however allowed him, at his request, the liberty to transfer his see from Caerleon, then a populous city, to Menevia, now called St. David's, a retired place, formed by nature for solitude.

Gyraldus adds, that St. David was the great ornament and pattern of his age. He spoke with much force and energy, but his example was more powerful than his eloquence; and he has in all succeeding ages been the glory of the British church. He continued in his last see many years; and having founded several monasteries, and been the spiritual father of many saints both British and Irish, died about the year 544, at a very advanced age. He was buried in the church of Saint Andrew, which, with the town and whole diocess, are named after him. Near the church stand several chapels, formerly resorted to with great devotion: the principal is that of St. Nun, mother of St. David, near which is a beautiful well still frequented by pilgrims. Another chapel is sacred to St. Lily, surnamed Gwas-Dafydd, that is, St. David's man; for he was his beloved disciple and companion in his retirement. He is honoured there on the third, and St. Nun, who lived and died the spiritual mother of many religious women, on the second of March. The three first days of March were formerly holidays in South Wales in honour of these three saints; at present only the first is kept a festival throughout the principality.

The leek worn on this day by Welshmen is said to be in memory of a great victory obtained by them over the Saxons; they, during the battle, having leeks in their hats, to distinguish themselves, by order of Saint David. Another account adds, that they were fighting under their king Cadwallo, near a field that was replenished with that vegetable.

I like the Leeke above all herbes and flowers;
When first we wore the same, the field was ours.
The Leeke is white and greene, wherby is ment
That Britaines are both stout and eminent;
Next to the Lion and the Unicorn,
The Leeke the fairest emblyn that is worne.

Mr. Owen supposes that the wearing of the leek originated in the custom of *cymortha*, still observed among the farmers of the country, where, in assisting one another in ploughing their land, they bring each their leeks to the common repast of the whole party.

2.—SAINT CHAD.

Saint *Ceadda* or Chad was educated in the monastery of Lindisfarne, under Saint Aidan. To improve himself in sacred literature he went into Ireland, and spent some time with Saint Egbert, till recalled by his brother, Saint Cedd, to assist him in arranging the concerns of the monastery of Lestingay, which he had founded in the mountains of the *Deiri*, or Woulds of Yorkshire. Saint Cedd being made bishop of London or of the East Saxons, left to him the entire government of this house. Oswi having yielded up Bernicia, or the northern part of his kingdom, to his son Alcfrid, this prince sent St. Wilfrid into France, that he might be consecrated to the bishopric of the Northumbrian kingdom, or of York; but he staid so long abroad, that Oswi himself nominated St. Chad to the dignity, who was ordained by Wini, Bishop of Winchester, assisted by two British prelates, in 666. Bede assures us that he zealously devoted himself to all the laborious functions of his charge, visiting his diocess on foot, preaching the gospel, and seeking

out the poorest and most abandoned persons to instruct and comfort, in the meanest cottages and in the fields.

Our saint afterwards left the see of York, and retired to the monastery of Lestingay, but was not suffered to bury himself long in that solitude. Jaruman, bishop of the Mercians, dying, St. Chad was called upon to take upon him the charge of that most extensive diocess. He was the fifth bishop of the Mercians, and first fixed that see at Lichfield, so called from a great number of martyrs slain and buried there under Maximianus Herculeus; the name signifying the Field of Carcases. Hence this city bears for its arms, a landscape covered with the bodies of martyrs. St. Theodorus considering St. Chad's old age, and the great extent of his diocess, absolutely forbad him to make his visitations on foot, as he used to do at York. Saint Chad remained in the diocess of Lichfield for two years and a half, dying in the great pestilence in 673.

2.—EMBER WEEK.

Dr. Mareschal derives *ember* from the Saxon word importing *a circuit* or *course;* so that these fasts being not occasional, but returning every year in certain courses, may properly be said to be Ember days, because fasts in course. The Ember days are the Wednesday, Friday, and Saturday after the first Sunday in Lent, and after the 13th of December. It is enjoined by a canon of the church, 'that Deacons and Ministers be ordained, or made, but only on the Sundays immediately following these Ember feasts.'—(*Nelson.*)

7.—PERPETUA.

Perpetua, a noble lady of Carthage, only 22 years of age, suffered martyrdom in 203, by order of Minutius Firmianus, under the persecution of the Emperor Severus. In the amphitheatre, Perpetua was exposed to the attacks of a wild cow, and, after being much gored by this animal, she languished for some

time under the wounds given her by a young and unskilful gladiator.

12.—SAINT GREGORY.

Saint Gregory, surnamed the Great, was born about the year 540. Gadianus, his father, enjoyed the dignity of a senator, and was very wealthy. Our saint, in his youth, applied himself to the study of grammar, rhetoric, and philosophy; and afterwards to the civil law, and the canons of the church, in which he was well skilled. He was consecrated pope about the year 590, and died in 604. Before his advancement to the see, Gregory projected the conversion of the English nation. Happening one day to walk through the slave-market, and taking notice that some youths of fine features and complexion were exposed to sale, he inquired what countrymen they were, and was answered that they came from Britain. He asked if the people of that country were christians or heathens, and was told they were still heathens. Then Gregory fetching a deep sigh, said, it was a lamentable consideration that the prince of darkness should be master of so much beauty, and have so comely persons in his possession; and that so fine an outside should have nothing of God's grace to furnish it within.

Bede adds, that Gregory again asked, what was the name of that nation, and was answered, that they were called *Angli* or *Angles*. 'Right,' said he; 'for they have angelical faces, and it becomes such to be companions with the angels in heaven.' 'What is the name,' proceeded he, 'of the province from which they are brought?' It was replied, that the natives of that were called *Deiri*. 'Truly *Deiri*, because withdrawn from wrath, and called to the mercy of Christ,' said he; alluding to the Latin, *De irâ Dei eruti*. He asked farther, 'How is the king of that province called?' They told him his name was *Alle*; and he, making an allusion to the word, said, '*Alleluiah*, the praise of God the Creator, must be sung in

those parts.' Although this offer was refused, he accomplished his wishes after he assumed the papal chair.

17.—SAINT PATRICK.

The tutelar saint of Ireland was born in the year 371, in a village called *Bonaven Taverniæ*, probably Kilpatrick, in Scotland, between Dunbriton and Glasgow. He is, however, claimed as a Cambrian by Mr. Jones, in his 'Welsh Bards,' who makes him a native of Caernarvonshire. When sixteen years old he was carried into captivity by certain barbarians, together with many of his father's vassals and slaves, and was taken to Ireland, where he kept cattle on the mountains and in the forests, in hunger and nakedness, amid snows, rain, and ice. After six months, our saint escaped from this slavery, only to fall into the hands of another master. At length emancipated, he travelled into Gaul and Italy, and spent many years in preparing himself for the holy functions of a priest, studying intensely until his 55th or 60th year. Being successively ordained deacon, priest, and bishop, he received the apostolical benediction from Pope Celestine, and was sent by him, about the beginning of the year 432, to preach the gospel in Ireland.

In the first year of his mission he attempted to explain the Christian doctrines to the general assembly of the kings and states of all Ireland, held yearly at Tarah, or Themoria, in East-Meath, the residence of the chief king, styled the monarch of the whole island, and the principal seat of the Druids or priests, and their pagan rites. The son of Neill, the chief monarch, declared himself against the preacher: however, he converted several, and, on his road to that place, the father of St. Benen or Benignus, his immediate successor in the see of Armagh. He afterwards converted and baptized the kings of Dublin and Munster, and the seven sons of the king of Connaught, with the greatest part of their subjects, and

before his death almost the whole island. He founded a monastery at Armagh; another called Domnach-Padraig, or Patrick's church; also, a third, named Sabhal-Padraig, and filled the country with churches and schools of piety and learning.

He died at the good old age of 120, and was buried at Down in Ulster; where his body is said to have been found in a church bearing his name, in 1185, and translated to another part of the same church. Many and wonderful are the miracles recorded of Saint Patrick. He restored sight to the blind, gave health to the sick, and raised the dead to life. He delivered Ireland from all venomous creatures, by virtue of the staff of Jesus; and 'fasted forty days without earthly food.' Some other strange marvels recorded of this saint are, that he produced fire from ice,—changed water into honey,—flesh-meat into fish,—raised a huge stone,—*increased the stature of a man to a sufficient height*,—and performed an abundance of other exploits: of these the reader may find a curious account in *Mr. Swift*'s Translation of *Jocelin's Life of Saint Patrick*, 8vo, Dublin, 1809.

The *shamrock* is said to be worn by the Irish, upon the anniversary of this saint, for the following reason. When he preached the gospel to the pagan Irish, he illustrated the doctrine of the Trinity by showing them a *trefoil*, or three-leaved grass, with one stalk; which operating to their conviction, the shamrock, which is a bundle of this grass, was ever afterwards worn upon this saint's anniversary, to commemorate the event. (*Brand.*)

18.—EDWARD, KING OF THE WEST SAXONS.

He was son of Edgar, who first united the heptarchy into one kingdom; after whose death, in the year 975, Edward succeeded to the throne at twelve years of age, but did not enjoy it more than two or three years. Being on a visit to Elfride, his mother-in-law, at Corfe-Castle in Dorsetshire, he was, by her orders, stabbed in the back while drinking a cup of wine; that

her son *Etheldred*, his half brother, might take his place. By the monks this cruel murder has been esteemed a martyrdom, probably on account of this king's attachment to them. The festival was first appointed by Pope Innocent IV, in 1245.

20.—MIDLENT SUNDAY.

The middle or fourth Sunday in Lent was formerly called the Sunday of the five Loaves, the Sunday of Bread, and the Sunday of Refreshment, in allusion to the gospel appointed for this day. It was also named *Rose Sunday*, from the pope's carrying a *golden rose* in his hand, which he exhibited to the people in the streets as he went to celebrate the eucharist, and at his return. *Mothering Sunday* is another name attached to this day, from the practice, in Roman Catholic times, of people visiting their *mother-church* on Midlent Sunday. Hence, perhaps, the custom now existing in some parts of England, of children visiting their parents, and presenting them with money, trinkets, or some other trifle. Furmety is commonly a rural repast on this day: it is made of whole grains of wheat first parboiled, and then put into and boiled in milk, sweetened and seasoned with spices.

21.—SAINT BENEDICT.

Benedict, or *Bennet*, was born at Norcia in Italy, about the year 480, and of an honourable family. Being sent by his parents to Rome, to complete his studies, he became disgusted with the licentiousness of the Roman youth, and retired to the mountains of Subiaco, about forty miles from the city. Bennet was now only fifteen, and lived for three years in a cave, Romanus, a monk, giving him provisions; these were let down by a rope, with a bell affixed, to give notice to the holy recluse. The remembrance of a lady whom he had seen at Rome occurring to his mind, he was induced to leave his desert; but he soon blunted the shafts of Cupid, by rolling himself among briars and nettles, till his body was covered with blood. Bennet founded the monastery of Cassino in 529:

it was built on the brow of a very high mountain, on the top of which there was an old temple of Apollo surrounded with a grove; which Bennet demolished, and upon its ruins he erected two oratories. He died in 542. Gregory records an extraordinary miracle wrought on this saint's account: The Goths, when they invaded Italy, came to burn his cell, but, being set on fire, it burnt round him in a circle, not doing him the least hurt. At this the Goths, being enraged, threw him into a hot oven, stopping it up close; but coming next day, they found him safe, neither his flesh scorched, nor his clothes singed.—The Benedictine order of monks, first instituted by our saint, was, in the ninth century, at its height of glory.

25. ANNUNCIATION OF THE B. V. M., *or Lady Day.*

This day celebrates the angel's message to the Virgin Mary, respecting our Blessed Lord. She was, probably, an only child, and but fifteen years of age when espoused to Joseph. She died A.D. 48, being about sixty years old.

27.—FIFTH SUNDAY IN LENT.

Dominica in Passione, or Passion Sunday, was the name given to this day in missals; as the church now began to advert to the sufferings of Christ. In the north, it is called *Carling* Sunday, and grey peas, first steeped a night in water, and fried with butter, form the usual repast.

Astronomical Occurrences.

Equation of Time.

EXCEPTING the rotation of the earth upon its axis, there is, as far as we know, no other body in nature, with which we are acquainted, whose motion is perfectly uniform and regular. The apparent motion of the Sun is very unequal, and therefore *equal* or *true* time, which flows on for ever in the same manner, cannot be truly measured by the Sun's apparent motion. Equal and true time is that which is shown by a well regulated time-keeper, as a clock or watch;

and in order that the apparent time, as shown by the sun-dial, may be made to agree with this, it must be corrected by proper equations, such as we have given in each of our astronomical portions, and an account of which we shall now endeavour to explain.

The difference between mean and apparent time depends chiefly on two causes, viz. (1.) The obliquity of the ecliptic with respect to the equator; and, (2.) the unequal motion of the earth in its elliptical orbit. Since the earth's axis is perpendicular to the plane of the equator, any equal portions of the equator will, by means of the earth's rotation upon its axis, pass over the meridian in equal times; and so, of course, would any equal portions of the ecliptic, provided it were parallel to or coincident with the equator. But as this is not the case, the daily motion of the earth upon its axis will carry unequal portions of the ecliptic over the meridian in equal times, the difference being always in proportion to the obliquity: and, as some parts of the ecliptic are much more obliquely situated with respect to the equator than others, these differences will, therefore, be unequal among themselves. If, for instance, two bodies, the Sun and a star, were to set out together from one of the equinoctial points, and to move through equal spaces in equal times, the Sun in the ecliptic and the star in the equator, then the star moving in the equator would always return to the meridian exactly at the end of every 24 hours, as measured by a well regulated clock; but the Sun moving in the ecliptic would come to the meridian sometimes sooner than the star, and sometimes not so soon, according to their relative situations; and they would never be found upon that circle exactly together, but on four days in the year, viz. on or about the 20th of March and the 23d of September, when the Sun enters the equinoctial points, and on the 21st of June and the 21st of December, when that body is in the solstitial points.

This is easily shown on the globe, by making

marks of chalk, or placing patches of black court plaster at equal distances, all round the globe, say 10 degrees from each other, beginning from the 1st of Aries, which answers to the 20th of March. Now, by turning the globe on its axis, it will be seen that all the patches in the first quadrant of the ecliptic, that is, from Aries to Cancer, come sooner to the brazen meridian than their corresponding marks on the equator. Hence *apparent* time marked by the dial would be before *equal* or *true* time, and we should have to *subtract* to obtain the true equation. In the second quadrant from Cancer to Libra, the patches in the ecliptic would come to the meridian later than those on the equator, and *apparent* time would be later than equal time, and we should have to *add*. In the other quadrants, the circumstances would be the same; that is, from Libra to Capricorn the Sun would be soonest, and from Capricorn to Aries it would be latest.

If, however, the reader refer to the tables of equation of time in each month, they will be found not to answer exactly to this: the apparent motion of the Sun or apparent time does not begin to get before time by the clock till about the 16th of April, instead of the 20th of March, and a similar change occurs about the 1st of September, instead of the 23d; and the times when the clock begins to surpass the Sun are about the 16th of June and the 25th of December, instead of the 21st of June and the 21st of December. This is owing to the *elliptic* form of the earth's orbit. If this orbit were circular, then the whole difference between *equal* time, as shown by the clock, and *apparent*, as shown by the dial, would arise entirely from the inclination of the earth's axis; and the change from *slow* to *fast*, and *fast* to *slow*, would be, as we first mentioned, on the 20th of March, the 21st of June, the 23d of September, and the 21st of December.

This, however, is not the case, for the earth travels, when it is nearest the Sun, that is in winter, more

than a degree in 24 hours; and when it is farthest from the Sun, that is in summer, less than a degree in the same time; consequently, from this cause, if it were to act alone, the natural day would be of the greatest length when the earth was nearest the Sun; for it must continue turning the longest time after an entire rotation, in order to bring the meridian of any place to the Sun again; and the shortest day would be when the earth moves the slowest in her orbit. Now these inequalities, combined with those arising from the inclination of the earth's axis to the ecliptic, or orbit of the earth, make up that difference which is shown by the equation table. In other words, the obliquity of the earth's orbit to the equator on the earth, which is the first-mentioned cause of difference between equal and apparent time, would make the clocks and dial agree when the earth enters Libra, Capricorn, Aries, and Cancer; but the unequal motion of the earth in its orbit would make them agree twice a year, when the earth is in its aphelion and perihelion; and consequently when these two points fall in the beginning of Cancer and Capricorn, or of Aries and Libra, they will concur in making the Sun and clocks agree. But the aphelion is somewhere in the ninth degree of Cancer, and the perihelion in the ninth degree of Capricorn; and therefore the Sun and clocks cannot be equal about the beginning of those signs, nor at any time in the year, except when the swiftness or slowness of equation, resulting from one of these causes, just balances the slowness or swiftness arising from the other.

The times of Sun-rising and setting for the 1st, 11th, and 21st, will be found as follow, viz.

1st.	Sun rises 35 m. past 6	Sun sets 25 m. past 5.
11th	- - - - 15 - - - - 6	- - - - 45 - - - - 5.
21st	- - - - 55 - - - - 5	- - - - 5 - - - - 6.

Equation of Time. [See the month of January.] The following table will show what is to be *added* to the apparent time shown on the dial, to obtain equal or true time for every fifth day of March:—

		m.	s.	
Tuesday, March 1, to the time on the dial ADD		12	48	For true time on the clock.
Sunday,	6,	11	37	
Friday,	11,	10	21	
Wednesday,	16,	8	57	
Monday,	21,	7	38	
Saturday,	26,	5	56	

The Georgian planet will be stationary on the 6th. The Sun enters the sign Aries at 37 minutes after 5 in the morning of the 21st. The planet Mercury will be found stationary on the 23d.

The Moon will be at the full at 15 minutes past 7 in the morning of the 6th; it enters the last quarter at half past one in the morning of the 14th. The succeeding new Moon or change will happen at 6 minutes past 9 in the evening of the 21st, and this enters its first quarter at 21 minutes past 5 in the afternoon of the 28th.

The time of the Moon's rising for the first five days after she is in the full will be as follows, viz. on the

7th of March,	5 min. past	7	in the afternoon.
8th,	19	8	ditto.
9th,	31	9	ditto.
10th,	39	10	ditto.
11th,	46	11	ditto.

On the 1st day of March, the Moon will eclipse the star marked ξ ♊. The immersion will occur at 32 minutes past 7 in the evening, when the star will be 5½′ north of the Moon's centre: the emersion happens 43 minutes past 8, the star being at that time 3 minutes north of the Moon's centre.

Mercury's greatest elongation from the Sun happens on the 16th.

In the eclipses of the first satellite of Jupiter, that will be visible in London this month, the emersions will occur at the following times, viz. on the

7th day, at	29 m. past	1	in the morning.
8th,	57	7	evening.
14th,	23	3	morning.
15th,	51	9	evening.
22d,	45	11	
29th,	40	1	morning.
31st,	8	8	evening.

VIEW OF THE SOLAR SYSTEM.

Of Mercury.

Of the eleven planetary bodies already mentioned, Mercury and Venus are called *inferior* planets; the others are denominated *superior* planets.

The inferior ones are so named, because they both revolve in orbits that are included within the orbit of the earth, which fact has been ascertained by observation; for by watching the progress of these bodies, it is found that they are continually changing their places among the fixed stars, and that they are never seen in opposition to the Sun; that is, they are never seen in the western side of the heavens in the morning, when the Sun appears in the east; nor in the eastern part of the heavens in the evening, when the Sun appears in the west.

To begin with Mercury, which is the nearest to the Sun. This planet is, to an inhabitant of the earth, never seen at a greater distance than about 28 degrees from the Sun, or about as far as the Moon appears to be from the Sun on the second day after the change. On this occount he is seldom visible to us; and when we do get a sight of him, it is for so short a time, and in twilight, that sufficient observations have not been made to ascertain whether this planet has a diurnal motion on its axis; though there is little doubt on the subject.

Mercury's mean distance from the Sun is nearly 37 millions of miles, and its real diameter is 3180 miles; so that the real diameter of Mercury to that of the earth is as 2 : 5; and the density of Mercury being to that of the earth in the proportion 2.5833 to 1, the quantity of matter in Mercury will be to that in the earth as 0.16536 to 1, or about the $\frac{1}{6}$th part only; for the quantities of matter in spherical bodies are as the cubes of their diameters and densities

conjointly[1]. The weights of equal bodies, on the surfaces of Mercury and the earth, are as 1.0333 to 1, such weight always varying as the diameters and densities conjointly[2].

As the intensities of light and heat, which the planets receive from the Sun, vary inversely as the squares of their distances from the Sun, and as the proportional distances of Mercury and the earth are as 37 to 95 or as 4 to 10, the inverse squares will be as $\frac{10}{4}\Big)^2$ or as $\frac{100}{16} = 6.25$ to 1, for the relative intensities of light and heat at Mercury and the earth.

Mercury changes its phases, like the Moon, according to its several positions with regard to the Sun and earth; except only that he never appears quite full, because his enlightened side is never turned directly towards us, but when he is so near the Sun as to be lost to our sight in his beams. And as his enlightened side is always towards the Sun, it is plain that he shines not by any light of his own, for if he did he would constantly appear round. The length of Mercury's year, or the time he takes in revolving about the Sun, is 88 days, and he travels at the rate of 105.000 miles in an hour[3].

When Mercury begins to appear in the evening, it is, as we have observed, with great difficulty distinguished in the rays of twilight: it disengages itself more and more in the following days; and after arriving at about 22° or 23° from the Sun, it returns towards him again. In this interval, the motion of

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(1) $\left.\begin{array}{l}\overline{2}\Big)^3 = 8 \\ \overline{5}\Big)^3 = 125\end{array}\right\}$ and $\frac{8 \times 2.5833}{125} = .16536$

(2) $\frac{2.5833 \times 2}{5 \times 1} = 1.0333.$

(3) $\frac{37.000.000 \times 6.28}{88 \times 24} = 105.000.$

Mercury with respect to the fixed stars is direct, but when returning it comes within the distance of 18° of the Sun, it seems stationary; after which its motion appears retrograde; it continues to approach the Sun, and is again, in the evening, lost in his rays. After continuing some time invisible, it is seen again in the morning, disengaging itself from the Sun's rays, and departing from the Sun; its motion is still retrograde, as it was before its disappearance: it afterwards becomes apparently stationary, and then resumes its direct motion; its distance increases, it then returns, and, disappearing in the morning in the light of the dawn, is soon after seen again in the evening, producing the same phenomena as before. The extent of the greatest digressions of Mercury from the Sun, on each side, varies from 16° 12′ to 29°. The length of its entire oscillation, as it has been called, or the return to the same position relatively to the Sun, varies likewise from 136 to 130 days.

A long series of observations was no doubt necessary to recognize the identity of Mercury as a morning and evening star, and which for a considerable time was regarded as two distinct bodies, that were alternately seen in the morning and evening to depart from and return to the Sun; but as the one never showed itself till the other disappeared, it was at last suspected to be the same planet which thus oscillated on each side the Sun.

The apparent diameter of Mercury is very variable, and its changes are evidently connected with its relative position to the Sun, and the direction of its motion. It is the least either when the planet in a morning immerges into the solar rays, or when in the evening it disengages itself from them; it is at its maximum when it immerges into the Sun's light in an evening, or when it becomes visible in the morning. It occasionally happens that during the interval of its disappearance in the evening, and its re-appearance

in the morning, it is seen projected in the form of a black spot upon the disk of the Sun, on which it describes a chord. This is called a transit of Mercury, and is, in fact, a real annular eclipse of the Sun; and from this we infer that the light of the planets is borrowed from that body.

The diameter of the Sun, viewed from Mercury, would appear between two or three times as big as it appears to us, that planet being so much nearer to him than we are; and therefore the Sun's disk would appear 6¼ times as large as to us. The best opportunities that we have of making observations on this planet, are those when it is seen on the Sun's disk, to which we have just now referred; in this situation it is only observable with a telescope. The node from which Mercury ascends northward above the ecliptic is in the 15th degree of Taurus, and of course the opposite is in the 15th degree of Scorpio. The earth is in these points about the 6th of November, and the 4th of May; and when Mercury comes to either of his nodes at his inferior conjunction about these times, he will appear to pass over the disk of the Sun. The first observation of this kind was that of Gassendi, in November 1631.

To an inhabitant of Mercury the solar spots will appear to traverse his disk sometimes in a right line from east to west, and sometimes elliptically. As all the other planets are above Mercury, its phenomena to them will be nearly the same as to us. Venus and the Earth, when in opposition to the Sun, will shine with full orbs, and afford a noble light to that planet.

The Naturalist's Diary.

Again the daisies peep, the violets blow;
Again the vocal tenants of the grove,
Forgot the pattering hail, or driving snow,
Renew the lay to melody and love.

THE beginning of this month is, in general, cold with keen winds, the air clear and healthy. The superabundant moisture of the earth is dried up, and the process of vegetation is gradually brought on; those trees which, in the last month, were budding, now begin to put forth their leaves. The latest springs are always the most favourable, because, as the young buds do not appear so soon, they are not liable to be cut off by chilling blasts. At the commencement of March,

WINTER flies!
And, see, the source of life and light uprise!
A height'ning arch o'er southern hills he bends;
Warm on the cheek the slanting beam descends,
And gives the reeking mead a brighter hue,
And draws the modest *primrose* bud to view.
Yet frosts succeed, and winds impetuous rush,
And hail-storms rattle through the budding bush.

The melody of birds now gradually swells upon the ear. The throstle (*turdus musicus*), perched on the leafless bough of a lofty tree, charms us not only with the sweetness but the variety of its lays. This bold and pleasing songster, from his high station, seems to command the concert of the grove, while, in the beautiful language of the poet,

The jay, the rook, the daw,
And each harsh pipe (discordant heard alone),
Aid the full concert, while the stock-dove breathes
A melancholy murmur through the whole.

The pheasant (*phasianus colchicus*) crows; the goose sits on its eggs; the duck (*anas boschas*) lays; hens sit; the crow (*corvus corone*) builds; and the golden-crowned wren (*motacilla regulus*) begins its

song. The body of this diminutive bird (says Buffon) when stript of its feathers is not quite an inch long. It delights in the largest trees, as oaks, elms, tall pines, and firs; particularly the first, in which it finds both food and shelter. Its food consists chiefly of the smallest insects, and it stays with us the whole year. The *rooks* are now fully employed in building and repairing their nests, and much amusement is afforded to the attentive observer of nature. They are continually fighting and pulling each other's nests to pieces. If a pair offer to build on a single tree, the nest is plundered and demolished, at once, by the community. When the first brood of rooks are sufficiently fledged, they all leave their nest-trees in the day-time, and resort to some distant place, in search of food, but return regularly every evening, in vast flights. After flying round their nest-trees, several times, with much noise and clamour, they all assemble together, and take up their abode for the night. The mischief committed by rooks, in plucking up springing corn, and other vegetables, is amply compensated; for,

> To the field they flock, and watch the plough;
> And as the shining share upturns the soil,
> They follow close,———
> And *seize the grub* from his dark cradle forced
> To hateful day, and on the loathsome feast
> The ravenous gluttons feed.—
> Their's is the task
> To thin the *chaffer breed*, the spoiler tribes
> Of the next May.

Those birds which have passed the winter in England now take their departure for more northerly regions. The fieldfares (*turdus pilaris*) travel to Russia, Sweden, and Norway, and even as far as Siberia. They do not arrive in France till December, when they assemble in large flocks of two or three thousand. The redwing (*turdus iliacus*), which frequents the same places, eats the same food, and is very similar in manners to the fieldfare, also takes

leave of this country for the season. Soon afterwards the woodcock (*scolopax rusticola*) wings its aërial voyage to the countries bordering on the Baltic[1]. In returning to our shores (between October and December) they do not come in large flocks, but keep dropping in singly, and sometimes in pairs. These birds take a day's rest, and then proceed to the very *same* haunts which they left the preceding season. Some other birds, as the crane and the stork, formerly natives of this island, have quitted it entirely, since our cultivation and population have so rapidly increased.

In this month, trouts begin to rise; blood-worms appear in the water; black ants (*formica nigra*) are observed; the blackbird and the turkey (*meleagris gallopavo*) lay; and house-pigeons sit. The wheat-ear (*sylvia œnanthe*) appears, and the greenfinch (*loxia chloris*) sings. The bat (*vespertilio*) is seen flitting about, and the viper uncoils itself from its winter sleep. This creature is no means common, and is the only venomous reptile in England: its bite proves dangerous, if neglected; but olive or salad oil rubbed on the wound, and also taken internally, is a certain remedy. They are found, generally, in rocky warm thickets, and in unfrequented heaths, where the field-mice afford them a favourite meal.

Frogs, enlivened by the warmth of spring, rise from the bottom of ponds and ditches, where they have lain torpid during the winter. The smelt (*salmo eperlanus*) begins to ascend rivers to spawn, when they are taken in great abundance[2]. This elegant fish is found about our coasts during the whole year, as

[1] From the beginning of March to the end of that month, or sometimes to the middle of April, they all keep drawing towards the coasts, and avail themselves of the first fair wind to return to their native woods.

[2] They are found in the Thames and the Dee, according to Mr. Pennant, in November, December, and January.

they rarely leave it to go to any great distance, except at the spawning season. The smelt has a peculiar odour, which is commonly compared to that of a cucumber. This fish varies in size, sometimes measuring twelve inches and upwards in length, and weighing half a pound.

Towards the latter end of the month, bees venture out of their hives.

There are several species of bees, natives of Great Britain; but it is the common honey-bee (*apis mellifica*) which has been so long and justly celebrated for its wonderful polity, the neatness and precision with which it constructs its cells, and the diligence with which it provides, during the warmth of summer, a supply of food for the support of the hive during the rigours of the succeeding winter. A hive contains three kinds of bees. (1.) A single *queen* bee, distinguishable by the great length of her body, and the proportional shortness of her wings. (2.) *Working-bees*, or neuters, to the amount of *many thousands*: these are the smallest sized bees in the hive, and are armed with a sting. (3.) *Drones*, or *males*, to the number, perhaps, of 1500 or 2000: these are larger than the workers, and are of a darker colour; they make a great noise in flying, and have no sting. The whole labour of the community is performed by the workers: they elaborate the wax and construct the cells; they collect the honey and feed the brood. The drones are regularly massacred by the workers in the beginning of the autumn. It is the office of the *queen-bee* to lay the eggs, which remain about three days in the cells before they are hatched. A small white *worm* then appears, (called indifferently, *worm*, *larva*, *maggot*, or *grub*): this larva is fed with honey for some days, and then changes into a *nymph*, or *pupa*. After passing a certain period in this state, it comes forth a perfect winged insect. The appearance of bees is a certain

indication that flowers are to be met with; for now, this 'golden daughter of the spring,'

From mead to mead, in wanton labour roves,
And loads its little thigh, or gilds its wing
With all the essence of the flushing groves:
Extracts the aromatic soul of flowers,
And, humming in delight, its waxen bowers
Fills with the luscious spoils, and lives ambrosial hours.

In several parts of South Africa, the bees suspend their honeycomb from edges of rocks; and these nests are easily discoverable by the Hottentots, who implicitly rely on the direction of a little brown bird, denominated the *indicator*, or honey-bird, that, on the discovery of a nest, flies in quest of some person, to whom it makes known the fruit of its research, by whistling and flying towards the place[1]. In some parts of France, and also of Piedmont, there are *floating apiaries* of a hundred bee-hives:

So through the vales of Loire the bee-hives glide,
The light raft dropping with the silent tide;
So, till the laughing scenes are lost in sight,
The busy people wing their various flight,
Culling unnumbered sweets from nameless flowers,
That scent the vineyard in its purple hours. ROGERS.

On the 20th, the *vernal* equinox takes place. All Nature feels her renovating sway, and seems to rejoice at the retreat of winter. The sallow (*salix*) now enlivens the hedges; the aspen (*populus tremula*) and the alder (*alnus betula*) have their flowers full blown; the laurustinus (*viburnum tinus*) and the bay (*laurus nobilis*) begin to open their leaves. The equinoctial gales are usually most felt, both by sea and land, about this time.

[1] On the nature and economy of this interesting insect, the reader may consult *Mr. John Hunter's* elaborate account, in the *Philosophical Transactions* for the year 1792; or *Dr. Shaw's Zoology*, vol. vi, part ii, pp. 289-349. Huber on Bees, 12mo, Edinb. 1808, and Edinb. Review, vol. xi, pp. 319-340. See also Virgil's fourth Georgic.

On the passive main
Descends th' ethereal force; and with strong gust
Turns from its bottom the discoloured deep.
Meantime the mountain-billows, to the clouds
In dreadful tumult swelled, surge above surge,
Burst into chaos with tremendous roar,
And anchored navies from their stations drive,
Wild as the winds across the howling waste
Of mighty waters.

Our gardens begin now to assume somewhat of a cheerful appearance. Crocuses, exhibiting a rich mixture of yellow and purple, ornament the borders; mezereon is in all its beauty; the little flowers 'with silver crest and golden eye,' the daisies, are scattered over dry pastures [1]; and the pilewort (*ranunculus ficaria*) is seen on the moist banks of ditches. The primrose, also (*primula veris*), peeps out beneath hedges.

Ask me why I send you here
The firstling of the infant year;
Ask me why I send to you
This PRIMROSE, all bepearled with dew;
I straight will whisper in your ears,
The sweets of love are washed with tears.
Ask me why this flower doth show
So yellow, green, and sickly too;
Ask me why the stalk is weak,
And bending, yet it doth not break;—
I must tell you these discover
What doubts and fears are in a lover. CAREW.

[1] —this bold floweret climbs the hill,
Hides in the forest, haunts the glen,
Plays on the margin of the rill,
Peeps round the fox's den.

Within the garden's cultured round
It shares the sweet carnation's bed;
And blooms on consecrated ground
In honour of the dead.

The lambkin crops its crimson gem,
The wild-bee murmurs on its breast,
The blue fly bends its pensile stem
Light o'er the skylark's nest. MONTGOMERY.

BURNS has a beautiful little poem addressed to this 'wee, modest, crimson-tipped flow'r.'

The sweet violet *(viola odorata)*[1] sheds its delicious perfumes. The leaves of honeysuckles are nearly expanded; in our gardens, the buds of the cherry-tree *(prunus cerasus)*, the peach *(amygdalus persica)*, the nectarine, the apricot, and the almond *(prunus armeniaca)*, are fully opened in this month. The buds of the hawthorn *(cratægus oxycantha)* and of the larch-tree *(pinus larix)* begin to open; and the tansy *(tanacetum vulgare)* emerges out of the ground; ivy-berries are ripe; the daffodil *(pseudonarcissus)* in moist thickets, the rush *(juncus pilosus)*, and the spurge laurel *(daphne laureola)* found in woods, are now in bloom. The common whitlow grass (*draba verna*) on old walls; the yellow Alpine whitlow grass (*draba aizoides*) on maritime rocks; and the mountain pepper-wort *(lepidum petræum)* among limestone rocks, flower in this month.

The gannets, or Soland geese[2] (*pelicanus bassanus*), resort in March to the Hebrides, and other rocky isles of North Britain, to make their nests, and lay their eggs. In the months of May and June their nests are described as so closely placed together, that it is difficult to walk without treading upon some of them; and it is said that the swarms of the old birds are so prodigious, that, when they rise into the air, they stun the ear with their noise, and overshadow the ground, like the clouds. The *Bass Isle*, in the Frith of Forth, is farmed out at a considerable rent for the eggs of the various kinds of water-fowl with which it swarms; and the produce of the Soland geese forms a large portion of this rent; for great numbers of their young ones are taken every season, and sold for about twenty-pence each, in Edinburgh, where

[1] This most delightfully fragrant of all flowers has been the theme of many an admiring poet;—the address 'To a Tuft of early Violets,' from the pen of Mr. Gifford, the translator of Juvenal, is an exquisite little poem.

[2] This bird is generally about seven pounds in weight, three feet in length, and six in breadth.

they are esteemed a favourite dish, being generally roasted, and eaten before dinner. From the nests placed upon the ground, the eggs are easily picked up*. Among the innumerable objects which are every day presented to the notice of the observant mind, in the grand theatre of nature, nothing can be more delightful than the various motions and pursuits of animals. The sportive skipping and playing of the young lambs, most of which are yeaned this month, are truly amusing; when they have gained strength, they are sent to the pastures:

Like the fond dove from fearful prison freed,
Each seems to say, '*come, let us try our speed;*'
Away they scour, impetuous, arduous, strong,
The green turf trembling as they bound along:
Adown the slope, then up the hillock climb,
Where every mole-hill is a bed of thyme;
There panting stop; yet scarcely can refrain;
A bird, a leaf, will set them off again.

The farmer dresses and rolls his meadows; spreads ant-hills; plants quicksets, osiers, &c.; sows flax seed, artificial grasses, beans and peas, broom and whin seeds, and grass seeds among wheat. About the 23d, he ploughs for and sows oats, and hemp and flax. A dry season is very important to the farmer, that he may get the seed early into the ground.

* In robbing the nests built in the *precipices*, chiefly for the sake of the birds, the business wears a very different aspect. The adventurous fowler, trained to it from his youth, and familiarized to the danger, is let down by a rope, either held fast by his comrades, or fixed into the ground on the summit, with his signal-cord, his pole-net, his pole-hook, &c. Thus equipped, he is enabled, in his progress, either to stop, to ascend, or descend, as he sees occasion. Sometimes, by swinging himself from one ledge to another, with the help of his hook, he mounts upwards, and clambers from place to place; and, at other opportunities, by springing backwards, he can dart himself into the hollow caverns of the projecting rock.

April.

THE word April is derived from *Aprilis*, of *aperio*, I open; because the earth in this month begins to open her bosom for the production of vegetables: or, according to others, from the Greek word Αφροδιτη, one of the numerous epithets given to Venus. April is described by PEACHAM (p. 418) as 'a young man in green, with a garland of mirtle and hawthorn buds, winged; in one hand primroses and violets, in the other the sign *Taurus*.' The Saxons 'called April by the name of *Oster-Monat*, some thinke of a goddesse called *Goster*, whereof I see no great reason, for if it tooke appellation of such a goddesse (a supposed causer of the Esterly windes), it seemeth to have bin somewhat by some miswritten, and should rightly be *Oster*, and not *Goster*. The winds indeed, by antient observation, were found in this moneth most commonly to blow from the East, and East in the *Teutonicke* is Ost, and

Ost-end, which rightly in English is *East-end,* hath that name for the Easterne situation thereof, as to the ships it appeareth which through the narrow seas doe come from the West. So as our name of the feast of *Easter* may be as much to say as the feast of *Oster,* being yet at this present in *Saxon* called *Ostern,* which commeth of *Oster-monat,* their and our old name of *April.*'—(*Verstegan,* p. 60.)

Remarkable Days.

1.—ALL FOOLS' DAY.

On this day every body strives to make as many fools as he can: the wit chiefly consists in sending persons on what are called sleeveless errands, for the *history of Eve's mother,* for *pigeon's milk, stirrup oil,* and similar ridiculous absurdities.

In Poor Robin's Almanack for 1760, there is a *pleasant,* and what is meant for a *poetical,* description of the modern fooleries on the 1st of April:—

The first of April, some do say,
Is set apart for all-fools' day;
But why the people call it so,
Nor I, nor they themselves, do know:
But on this day are people sent
On purpose for pure merriment;
And though the day is known before,
Yet frequently there is great store
Of these forgetfuls to be found,
Who're sent to dance *Moll Dixon's round;*
And having tried each shop and stall,
And disappointed at them all,
At last some tells them of the cheat;
Then they return from their pursuit,
And straightway home with shame they run,
And others laugh at what is done.
But 'tis a thing to be disputed,
Which is the greatest *fool* reputed,
The man that innocently went,
Or he that him designedly sent.

I am convinced (says Mr. Douce) that the antient ceremony of the 'Feast of Fools'[1] has no connection whatever with the custom of making fools on the 1st of April. The making of April fools, after all the conjectures which have been formed touching its origin, is certainly borrowed by us from the French, and may, I think, be deduced from this simple analogy. The French call them April Fish *(Poissons d'Avril)*; i. e. simpletons, or, in other words, silly mackerel, who suffer themselves to be caught in this month. But as, with us, April is not the season of that fish, we have very properly substituted the word 'FOOLS.'

We shall conclude this light subject with the following elegant verses from *Julia*, or *Last Follies*, 4to, 1798:—

THE LADY, *who threatened to make the* AUTHOR *an* APRIL FOOL.

Why strive, dear Girl, to make a Fool
Of one not wise before,
Yet, having 'scaped from Folly's school,
Would fain go there no more?

Ah! if I must to school again,
Wilt thou my teacher be?
I'm sure no lesson will be vain
Which thou canst give to me.

One of thy kind and gentle looks,
Thy smiles devoid of art,
Avail, beyond all crabbed books,
To regulate my heart.

Thou need'st not call some fairy elf,
On any April Day,
To make thy bard forget himself,
Or wander from his way.

[1] The *Fête de Fous* was formerly practised on the 1st of January, and throughout the Christmas vacation. This festival consisted of a burlesque election of a mock pope, mock cardinals, and mock bishops, attended with a number of absurd and indecent ceremonies, gambols, and antics.

One thing he never can forget,
Whatever change may be,
The sacred hour when first he met
And fondly gazed on thee.

A seed then fell into his breast;
Thy spirit placed it there:
Need I, my Julia, tell the rest?
Thou seest the blossoms here.

3.—PALM SUNDAY.

In the missals, this day is denominated *Dominica in ramis Palmarum*, or Palm Sunday; and was so called from the palm branches and green boughs formerly distributed on that day, in commemoration of our Lord's riding to Jerusalem. Sprigs of *box-wood* are still used as a substitute for *palms* in Roman Catholic countries.—Stow, in his Survey of London, tells us, that, in the week before Easter, 'had ye great shewes made for the fetching in of a *twisted tree*, or *with*, as they termed it, out of the woods into the king's house, and the like into every man's house of honour or worship.' This must also have been a substitute for the palm: thus it is still customary with our boys to go out and gather the *willow-flowers*, or *buds*, at this time.

3.—RICHARD, *Bishop*.

Richard, surnamed *de Wiche*, from a place in Worcestershire where he was born, was educated at the Universities of Oxford and Paris. He afterwards travelled to Bononia, where he studied the canon law for seven years. On his return home he was nominated to the see of Chichester by the chapter; but his appointment being opposed by the king, Richard appealed to Rome, and had his election confirmed by the pope, who consecrated him also at Lyons in the year 1245. He was as remarkable for his learning and diligence in preaching, as he was for integrity. Richard was canonized by Pope Urban.

4.—SAINT AMBROSE.

Our saint was born about the year 340, and was educated in his father's palace, who was Prætorian Præfect of Gaul. After his father's death, he went with his mother to Rome, where he studied the laws, practised as an advocate, and was made governor of Milan and the adjacent cities. Upon the death of Auxentius, Bishop of Milan, he was unanimously chosen to succeed him; and he ruled over this see with great piety and vigilance for more than twenty years; during which time, he gave all his money to pious uses, and settled the reversion of his estate upon the church. He converted the celebrated St. Augustine to the faith, and at his baptism, in a miraculous manner, composed that divine hymn, so well known in the church by the name of *Te Deum*. He died, aged 57, in the year of our Lord 396.

7.—MAUNDY THURSDAY.

This day is called in Latin *dies Mandati*, the day of the command, being the day on which our Lord washed the feet of his disciples, as recorded in the second lesson. This practice was long kept up in the monasteries. After the ceremony, liberal donations were made to the poor, of clothing and of silver money, and refreshment was given them to mitigate the severity of the fast. On the 15th April 1731, (Maundy Thursday) a distribution was made, at Whitehall, to 48 poor men, and 48 poor women, (the king's age then being 48) of boiled beef, and shoulders of mutton; fish, and loaves; shoes, stockings, linen and woollen cloth, and leathern bags, with 1, 2, 3, and 4 penny pieces of silver, and shillings; to each, about four pounds in value. The Archbishop of York also *washed the feet* of a certain number of poor persons. James II. was the last king who performed this in person. A relic of this custom is still preserved in the donations dispensed at St. James's on this day.

8.—GOOD FRIDAY.

This day commemorates the sufferings of Christ, as a propitiation for our sins. Holy Friday, or the Friday in Holy Week, was its more antient and general appellation; the name Good Friday is peculiar to the English church. It was observed as a day of extraordinary devotion. A remnant of popery is still retained in the *cross buns* which are eaten on this day.

9.—EASTER EVE.

Particular mortifications were enjoined to the earliest Christians on this day. From the third century, the fast was indispensable and rigid, being protracted always to midnight, sometimes to the cock-crowing, and sometimes to the dawn of Easter day; and the whole of the day and night was employed in religious affairs.

10.—EASTER DAY, OR EASTER SUNDAY.

Much difference of opinion prevailed in the Eastern and Western churches respecting the precise time of observing Easter; till, in 325, the Council of Nice declared, that the feast should be kept by all churches on the same day. Easter is styled by the fathers the highest of all festivals, the feast of feasts, the queen of festivals, and *Dominica gaudii*, the joyous Sunday. Masters granted freedom to their slaves at this season; and valuable presents were made to the poor. Many of the vulgar in the country rise early on Easter day, and walk into the fields to see the *sun dance*, as they term it;—this remarkable sight, however, may be observed at any other time, by setting a vessel full of water in the open air, and, if the sun shine, the reflection of that luminary will appear to *dance*, from the tremulous motion of the water. Eggs, stained with various colours in boiling, and sometimes covered with leaf gold, are, at Easter, presented to children, at Newcastle, and other places in the north. They ask for

their *Pasche*, or Paste Eggs, as for a fairing at this season.

11, 12.—EASTER MONDAY *and* TUESDAY.

Every day in this week was formerly observed as a religious festival, sermons being preached and the sacrament administered. In many places, servants were permitted to rest from their usual employments, that they might constantly attend public worship. During fifteen days, of which the paschal solemnity consisted, the courts of justice were shut, and all public games, shows and amusements, were prohibited: it is unnecessary to observe, that this practice has long ceased, and that the Easter week is usually devoted to relaxation and amusement. Fitzstephen's description of an Easter holiday, in the time of Henry II, is somewhat curious: 'They fight battles,' says he, 'on the water; a shield is hanged upon a pole, fixed in the midst of the stream: a boat is prepared without oars, to be carried by violence of the water, and in the forepart thereof standeth a young man, ready to give charge upon the shield with his launce. If so be he break his launce against the shield, and do not fall, he is thought to have performed a worthy deed; if so be, without breaking his launce, he runneth strongly against the shield, down he falleth into the water, for the boat is violently forced with the tide; but on each side of the shield ride two boats, furnished with young men, which recover him that falleth as soon as they may. Upon the bridge, wharfs, and houses by the river's side, stand great numbers to see and *laugh thereat*.' How different from these amusements are the sports of Greenwich Hill, and the humours of an Epping hunt, in which our apprentices now take so much delight!

According to Durand, on Easter Tuesday, *wives* used to *beat* their *husbands*; on the day following the *husbands* their *wives*. There is a strange custom still retained in the city of Durham on these holi-

days. On one day, the men take off the women's shoes, which are only to be redeemed by a present: on another day, the women take off the men's in like manner. The practice of *lifting* is pursued in some of the northern counties on Easter Monday and Tuesday. On the first of these days, the men lift the women, by taking hold of their arms and legs; and on the Tuesday, the women use the like ceremony with the men, which is repeated three times by each party. In the counties of Shropshire, Cheshire, and Lancashire, a ceremony, similar to this, is called *heaving*. On Easter Monday, a party of men go *with a chair*, decorated with ribbons and favours, into every house into which they can get admission, force every female to be seated in their vehicle, and lift her up three times with loud huzzas. On the Tuesday, the *women* claim the same privilege.

17.—LOW SUNDAY.

It was a custom among the primitive Christians, on the first Sunday after Easter-Day, to repeat some part of the solemnity of that grand festival; whence this Sunday took the name of *Low-Sunday*, being celebrated as a feast, though in a lower degree. In Latin, this day is called *Dominica in Albis*, or rather *post Albas*, (i. e. *depositas)* that is, the Sunday of taking off the *Chrysoms*, or white robes; because those who were baptized on Easter Eve now laid aside these garments, and deposited them in the churches, to be used as evidence against them, if they should at any time violate or deny that faith which they had professed at their baptism.

19.—SAINT ALPHEGE.

A native of England, Alphege was first abbot of Bath, then Bishop of Winchester, in the year 984, and, twelve years afterwards, Archbishop of Canterbury. In the year 1012, the Danes being disappointed of some tribute money which they claimed as due to them, they entered Canterbury, and burnt

both the city and church, and the greater part of the inhabitants were put to the sword. After seven months' miserable imprisonment, the good Archbishop was stoned to death at Greenwich.

23.—SAINT GEORGE.

This illustrious saint, termed by the Greeks the 'great martyr,' was born in Cappadocia, of noble christian parents. He was strong and robust in body, and, having embraced the profession of a soldier, was made a tribune or colonel in the army under Dioclesian: his courage and constancy soon induced the emperor to promote him. But that prince having declared war against the christian religion, St. George laid aside the marks of his dignity, threw up his commission and posts, and complained to the emperor himself of his severities and bloody edicts. He was immediately cast into prison, and tried first by promises; and afterwards put to the question, and tortured with great cruelty; but nothing could shake his constancy. The next day he was led through the city, and beheaded, in the year 290.

Saint George is the patron saint of England; for this the following reason is assigned. When Robert, Duke of Normandy, the son of William the Conqueror, was fighting against the Turks, and laying siege to the famous city of Antioch, which was expected to be relieved by the Saracens, St. George appeared with an innumerable army coming down from the hills all clad in white, with a red cross on his banner, to reinforce the christians; this so terrified the infidels, that they fled and left the christians in possession of the town. Under the name and ensign of St. George, our victorious Edward III, in 1330, instituted the most noble order of knighthood in Europe, consisting of twenty-five knights besides the sovereign. Its establishment is dated fifty years before the knights of St. Michael were instituted in France by Lewis XI, eighty years

before the order of the Golden Fleece, established by Philip the Good, Duke of Burgundy; and one hundred and ninety before the order of St. Andrew was set up in Scotland by James V. The Emperor Frederic IV instituted, in 1470, an order of knights in honour of St. George; and an honourable military order in Venice bears his name. St. George is usually painted on horseback, and tilting at a dragon under his feet: but this representation is no more than an emblematical figure, purporting, that by his faith and christian fortitude he conquered the devil, called the dragon in the Apocalypse.—*(Butler.)*

25.—SAINT MARK.

Mark, according to Eusebius, was sent into Egypt by the Apostle Peter, where he converted an immense number of people. He did not confine his preaching to Alexandria, but, according to Nicephorus, travelled through the countries of Marmorica, Pentapolis, and others, in which places the people were barbarous in their manners, and idolatrous in their worship. Here Mark continued till he had established them in the profession of the Gospel. Returning to Alexandria, he preached there, arranged the affairs of the church, and constituted governors and pastors; but about Easter, when some of the heathens kept the solemnities of their idol Serapis, St. Mark fell a victim to their fury; for, being seized while officiating in the church, a rope was tied round his neck, and he was dragged over the rocks by the sea-shore, till he died. His Gospel was written in the year 63. The order of Knights of St. Mark at Venice, under the protection of this evangelist, was instituted in the year 737, the reigning doge being always grand master:—their motto was, '*Pax tibi, Marce, Evangelista Meus.*'

Astronomical Occurrences.

Of the Calendar.

We are able to trace the origin of the Calendar to Romulus, the founder of Rome; but it has undergone various reformations since his time, of which it will be the business of this article to give a brief account. Romulus distributed time into several periods, for the use of those under his command: he observed, with as much accuracy as the knowledge of the times would admit, the recurrence of the seasons, and divided the year into ten months, making the first in the spring, and on the first of March. He suspected that the Sun run its course in 304 days, and the months of this legislator were not, at first, equally divided; some of them consisted of only 20 days, and some had 35 or perhaps 40 days; but, afterwards, he made four of his months to consist of 31 days, and the other six of 30 days, making together 304 days.

The calendar of Romulus was reformed by Numa, who made it consist of 355 days, and transferred the beginning of the year from March to January, reckoning March the second month, April the third, and placing February, which even then consisted of only 28 days, at the end of the calendar. The year thus arranged, remained undisturbed till the year 452 before Christ, when the decemviri changed the order of the months, reckoning them in the same manner that they are now found in the almanack, viz. January, February, March, April, &c.

As the real length of the year had not yet been ascertained, great disorders were occasioned in its constitution, which Julius Cæsar, with the advice and assistance of Sosigenes, a celebrated mathematician, undertook to rectify about the year B.C. 46. He found that the months had considerably receded from the seasons to which they had been adjusted by Numa, and that the dispensation of time in the calendar could

never be properly settled without having a regard to the annual course of the Sun. To bring forward the months to their proper places, he took an account of the days which had been lost by the former mode of reckoning, and formed a year of 15 months, or 445 days, which, on account of its quantity and design, has been called the *year of confusion*. This year being ended, the Julian year commenced on the 1st of January B. C. 46. From this time, the civil year and months were regulated by the course of the Sun. As the philosopher found the annual course of the Sun to consist of 365 days 6 hours, he made his year to consist of 365 days for three years successively, and every fourth year of 366 days, in order to comprehend the odd six hours. For this purpose, he ordained that an intercalary day should be added every fourth year to the 23d of February; that is, the 24th day, or the 6th of the calends of March, was to be reckoned twice; and hence this year was denominated *Bissextile*. It is likewise called *Leap-Year*, from the year leaping over a day more of time in that year than in a common year. Hence the *Julian* Calendar, so called from Julius Cæsar, is disposed into periods of four years each; of which the first three are called common, and consist of 365 days, and the fourth bissextile, having 366 days.

The Julian year was still imperfect; for as the time in which the Sun apparently performs his annual revolution, that is, the time in which the earth actually makes its journey round that luminary, is 365 d. 5 h. 48 m. 48 sec., the civil year of 365 d. 6 h. must have exceeded the solar year by 11 m. 12 sec., which, in the space of about 130 years, amounted to a whole day. The imperfections of the Julian Calendar were not observed for several hundred years, and it was not till the year 1582 that the next reformation was effected: the error, accumulated by this means, amounted to about 10 days at that time, so that the vernal equinox, which had been fixed, by Sosigenes,

in the time of Julius Cæsar, on the 25th of March, was at the time of the Council of Nice, held in the year 325, fixed on the 21st of March, and in 1582 it was found to happen on the 11th. This constant anticipation of the equinox became an object of serious complaint in the 15th century; and in 1474, Pope Sextus IV, being convinced of the necessity of a reformation, sent for Regiomontanus, a celebrated mathematician, and presented him with the archbishopric of Ratisbon, in order to engage him in the undertaking. But a premature death preventing him from the accomplishment of the design, the project was suspended for a whole century. It was now that Pope Gregory XIII had the honour of executing what several preceding Pontiffs and Councils had attempted before in vain. He invited to Rome a considerable number of mathematicians and astronomers, employed ten years in the examination of their several formulæ; and, finally, gave the preference to the plan proposed by Aloisius and Antonius Lilius, two brothers of Verona. He transmitted copies of this plan in 1577 to all the Catholic states and the learned academies at that time existing. A council of the most learned prelates was convened by the Pope, and, the subject being finally settled, a brief was published in the month of March, A.D. 1582, by which the use of the old calendar was entirely abrogated in all countries over which his Holiness had any sway, and the new one substituted in its stead, called, from his name, the Gregorian Calendar.

The principle adopted was, that the ten days which had been gained by the old account should be taken from the month of October, of the year then current, and the equinox brought back to the 21st of March, as it had been settled by the Council of Nice; and to prevent the future recurrence of a similar variation, it was ordained, that, instead of making every hundredth year a bissextile, as was the case before, every four hundredth year only should be considered as bissextile,

and the rest as common years. The length of the solar year, and the time of the vernal equinox, were, by these means, very accurately settled: for as a day was gained, by the former mode of reckoning, in every interval of 130 years, this was nearly equivalent to the gain of three days in every 400 years; and consequently, by making the years 1700, 1800, 1900, to be common years, instead of leap years, the error arising from the odd time would be properly corrected; so that the new mode of reckoning cannot vary a single day from true time in less than 5000 years.

When the Pope had thus reformed the calendar, he ordered all the ecclesiastics under his jurisdiction to conform to this new mode of reckoning, and exhorted Christian princes every where to adopt it in their dominions. Hence it was instantly introduced into almost all Catholic countries. The Catholic states of Germany adopted it, but those that were of the reformed faith rejected it. Hence arose a difference of 10 days between the methods of reckoning afterwards used in Catholic and Protestant countries. In the year 1700, the reformation of the calendar was introduced into the Protestant states of Germany, and also into Denmark. In Sweden it did not obtain till March 1753. In this country, an act of parliament was passed to cancel *eleven* days out of the month of September, because, as 170 years had elapsed since the Gregorian alteration had taken place, the old style had consequently gained more than a day upon the course of the Sun than it had at the former period. The old style, then, in Great Britain, and all its dependencies, ceased on the second of September 1752, and the next day, instead of being the *third*, was called the 14th. By the same act, the beginning of the year was changed from the 25th of March to the 1st of January.

A considerable difficulty still remained, which was to make the lunar year agree with the solar one, and in settling the true time for the observance of Easter,

and the other moveable feasts. It had been ordered by the Council of Nice, that Easter should be celebrated upon the first Sunday after the first full Moon following the vernal equinox. And in order to the due observance of this rule, it became necessary to know when the full Moons would happen in the course of every year. Now the revolutions of the Sun and Moon are not very obviously commensurate, the solar year containing 12 lunations, and about 11 days; but it had been discovered by Meto, 2000 years ago, that 19 solar years contain exactly 235 lunations; and this determination is so very accurate, that it makes the lunar month only half a minute too long. Hence it happens, that, in every period of 19 years, the Moon's age is the same on the same day of the year. The number of the year in the Metonic circle is called the *Golden* number, the calendar of Meto having been ordered, at the celebration of the Olympic games, to be engraved in letters of *gold* on a pillar of marble. At present, if we add 1 to the number of the year, and divide by 19, the remainder will be the Golden number: thus, for 1814, $\frac{1814+1}{19} = \frac{1815}{19} = 95$ and 10 over as a remainder, which remainder 10 is the Golden number.

If we subtract 1 from the Golden number, then multiply by 11 and divide by 30, the remainder will be the *epact*, which is the Moon's age on the 1st of January; thus, for 1814, we have $9\ (10-1) \times \frac{11}{30} = \frac{99}{30} = 3$ and 9 over, which nine as a remainder is the epact. The application of these numbers will be shown in another part of the volume.

The time of the Sun's rising and setting in London, at intervals during the month of April, is as follows:

Friday	1st, Sun rises	34 m. past 5.	Sun sets	26 m. after 6
Monday	11th - - - - -	14 - - - - 5	- - - - -	46 - - - - 6
Thursday	21st - - - - -	55 - - - - 4	- - - - -	5 - - - - 7

Equation of Time. [See the month of January.] The following table will show what is to be added to and what is to be subtracted from the apparent time, as shown on the dial, to obtain equal or true time for every fifth day during the month of April.

			m.	s.	
Friday - - -	April 1st,	to the time on the dial add	4	5	For true time on the clock.
Wednesday - - -	6th	- - - - - - - - - - - - -	2	34	
Monday - - - -	11th	- - - - - - - - - - - - -	1	9	
Friday - - - - -	15th	- - - - - - - - - - - - -	0	6	
Thursday - - - -	21st	from - - - - - subtract	1	17	
Tuesday - - - -	26th	- - - - - - - - - - - - -	2	15	

The Moon will be full at 29 m. past 8 in the afternoon of the 4th: it enters its last quarter on the 12th, at 23 m. past 9: the change or new Moon is at 55 m. past 7 on the 20th; and it enters its first quarter at 6 m. past midnight on the 26th.

The time of the Moon's rising for the first five days after she is full, is as follows:—

5 days	27 m. past	7
6 - - -	29 - - - -	8
7 - - -	39 - - - -	9
8 - - -	43 - - - -	10
9 - - -	45 - - - -	11

Venus will be stationary on the 3d, Mercury on the 15th, and Jupiter on the 27th. The Sun enters the sign Taurus 11 m. past 6 in the evening of the 20th. On the 26th of this month, the Moon will eclipse the star δ ♋. The immersion will occur at 25 m. past 12 at night, and the emersion at 18 m. after 1 the next morning, the star passing under the Moon's centre. On the 1st, there will be an obscuration of the star A ♉ by the planet Mars, the star being 18′ north of the centre of the planet; and on the 8th, the same planet will pass over 2 ♈ ♉, 29′ south.

The greatest elongation of Mercury will be on the 30th, and the inferior conjunction at four o'clock in the afternoon of the 2d. At six in the morning of the 20th, the planet Saturn will be in its quadrature, that is, three signs distant from the Sun.

The eclipses of Jupiter's first satellite, that are visible in these parts, will for April be as follow :—

7th day	3 m. past 10	in the evening.
14th	57 11	
22d	52 1	morning.
23d	20 8	evening.
30th	15 10	

These times apply to their emersions.

VIEW OF THE SOLAR SYSTEM.

Venus, the most beautiful star in the heavens, known by the names of the morning and evening star, like Mercury, described in the observations of the last month, keeps near the Sun, though she recedes from him almost double the distance of that planet. She is, however, never seen in the eastern quarter of the heavens when the Sun is in the western, but always seems to attend him in the evening, or, by preceding him, to give notice of his approach in the morning.

This planet offers the same phenomena as Mercury, with this difference, that its phases are much more sensible, its oscillations more extensive, and their period more considerable: her greatest distance from the Sun varies from 45° to nearly 48°, and the mean duration of a complete oscillation is 584 days. The retrograde motion of this planet commences or finishes, when the planet, approaching the Sun in the evening, or receding from it in the morning, is about 27° or 28° distant from it.

Venus, like Mercury, has been sometimes seen, though the phenomenon is extremely rare, moving across the Sun's disk in the form of a round black spot, with an apparent diameter of 59″. A few mornings after this has been witnessed, Venus is seen in the morning west of the Sun, if examined with a telescope of very moderate powers, in the form of a

fine crescent, with the convexity turned towards the Sun. She moves gradually westward with a retarded motion, and the crescent becomes more full. In about ten weeks she has moved 46° west of the Sun, and then she appears a semicircle, like our Moon in its first quarter, and her diameter is taken at 26″. She now appears to become stationary, after which she moves eastward with a motion gradually accelerated, and overtakes the Sun about 9½ months after having been seen on its disk. Some time after this she is seen in the evening, east of the Sun, round like a full Moon, but very small, on account of its great distance from the earth. She now moves eastward, and increases in apparent magnitude, but loses her roundness, till she gets about 46° east of the Sun, when she is again a semicircle. She now has a retrograde motion westward, increasing in diameter, but at length becomes a crescent, like a waning Moon; and at last, after a period of nearly 584 days, she comes again into conjunction with the Sun, with an apparent diameter of 59″. The mean arc of retrogradation is about 16°, and its mean duration is 42 days. She does not move in the plane of the ecliptic, that is in the plane of the earth's orbit, but deviates from it several degrees.

The transits of Venus, or her passages across the disk of the Sun, observed from different parts of the earth, are very sensibly different in the times of their duration; a circumstance that arises from her parallax, which leads persons differently situated to refer it to different points of the solar disk, and of course it appears to them to describe different chords in its passage over it. In the transit which took place in 1769, the difference of its duration, as observed at Otaheite, and at Wardhuys in Lapland, amounted to 23 m. 10″. The knowledge of this parallax enables us to ascertain that of the Sun, and consequently to discover its distance from the earth. Hence the transits of Venus have proved of great importance in astronomy. After succeeding each other in the in-

terval of eight years, they do not occur again for more than a century, when they succeed each other again, during an interval of eight years, and thus they continue. The two last transits happened in 1761 and 1769: at both those periods astronomers were sent to different countries, where the observations were likely to be made under the most favourable circumstances, and it is from the result of their observations that the parallax of the Sun has been concluded to be equal, at his mean distance from the earth 16″.5. Excepting such transits as these, Venus exhibits the same appearances regularly every eight years, her conjunctions, elongations, and times of rising and setting, being very nearly the same, on the same days as before.

The real diameter of Venus is nearly equal to that of the earth, being about 7680 miles, and her distance from the Sun is 68 millions of miles; her excentricity is 490,000 miles: the inclination of her orbit to the ecliptic or orbit of the earth is 3° 23′; the points of their intersection or nodes are 15° of Gemini and Sagittarius; the place of her aphelion = 9°: her axis is supposed to be inclined to the plane of her orbit about 75°, and her periodical course round the Sun 224 days 17 hours. The diurnal rotation round her axis is not well ascertained, being, according to Cassini, 23 hours; but according to the observations of Bianchini, it is 24 days 8 hours: this latter opinion is not generally admitted.

The phases of Venus to which we have already referred, were first discovered by Galileo, who thus accomplished the prediction of Copernicus; for when this illustrious astronomer revived the antient Pythagorean system, asserting that the earth and planets revolve about the Sun, it was objected that, in such case, the phases of Venus should resemble those of the Moon; to which Copernicus replied, that at some future time this resemblance would be found out. Galileo sent an account of the first discovery of these phases in a letter written from Florence, in the year

1611, to William de Medici, the Duke of Tuscany's Ambassador at Prague, desiring him to communicate it to Kepler. Having recited the observations he had made, he adds, 'we have the most certain, sensible decision and demonstration of two grand questions, which to this day have been doubtful, and disputed among the greatest masters of reason in the world. One is, that the planets in their own nature are opake bodies, attributing to Mercury what we have seen in Venus: and the other is, that Venus necessarily moves round the Sun, as also Mercury and the other planets; a thing fully believed, indeed, by Pythagoras, Copernicus, Kepler, and myself, but never yet proved, as now it is by ocular inspection upon Venus.'

In the Philosophical Transactions for the year 1792, are published the results of a course of observations on the planet Venus, begun in the year 1780, by Mr. Schroeter, of Lilienthal, Bremen. From these observations, the author infers that Venus has an atmosphere in some respects similar to that of our earth, and that it has mountains on its surface five or six times as high as those on the earth. Dr. Herschel, likewise, between the years 1777 and 1793, has made a great number of observations on this planet, accounts of which are given in the Philosophical Transactions for 1793. He says that the planet revolves about its axis, but the time of its revolution is uncertain: that the planet's atmosphere is considerable: that the planet has probably hills and inequalities on its surface, but he has not been able to see much of them, owing probably to the great density of its atmosphere: with respect to the mountains of Venus, no eye, he says, which is not considerably better than his, or assisted by better instruments, will ever get a sight of them. He makes the apparent diameter of Venus, at the mean distance of the earth, to be 18″.79, which makes Venus larger than the earth, instead of being less, as was generally supposed.

The Naturalist's Diary.

Advancing Spring profusely spreads abroad
Flowers of all hues, with sweetest fragrance stored;
Where'er she treads, love gladdens every plain,
Delight, on tiptoe, bears her lucid train;
Sweet Hope, with conscious brow, before her flies,
Anticipating wealth from summer skies.

If there has been a medium proportion of easterly winds in the previous part of the winter, the month of April may be expected to be mild, with gentle showers; thus affording to vegetables an abundant supply of water, which is so indispensably necessary to their existence. The many thousand tribes of *vegetables* are not only all formed from a few simple substances, but enjoy the same sun, vegetate in the same medium, and are supplied with the same nutriment. It is, indeed, wonderful that all orders of vegetables are produced from four or five natural substances, viz. caloric, light, water, air, and carbon. How admirable, then, must the formation of those organs be, which, by their peculiar actions, shall produce such various modifications of these substances, so as to form the different colours, tints, odours, tastes, &c. of the vegetable kingdom! How surprising must be the progress of vegetation! How rich the economy of nature!

The arrival of the *swallow*, early in this month, announces the approach of summer, and now all nature assumes a more cheerful aspect. The swallow tribe is of all others the most inoffensive, harmless, entertaining and social; all, except one species, attach themselves to our houses, amuse us with their migrations, songs, and marvellous agility, and clear the air of gnats and other troublesome insects, which would, otherwise, much annoy and incommode us. Whoever contemplates the myriads of insects that

sport in the sun-beams in a summer's evening in this country, will soon be convinced to what a degree our atmosphere would be choked with them, were it not for the friendly interposition of the swallow tribe! Swallows are found in every country of the known world, but seldom remain the whole year in the same climate:

Long, little wand'rer, be thy stay
Within our sea-girt Isle!
And Summer yield her softest sweets
To pay thy pleasing toil!
And many a fresh returning year
Again survey thy swift career!
And thy early note again
Haply please the rural swain,
While 'twitt'ring o'er the straw-built shed'
Thou 'wak'st him from his lonely bed!' DR. SHAW.

There are four species of the hirundines that visit England; they arrive in the following order:

1. The *chimney swallow* (*hirundo rustica*) builds its nest generally in chimnies, in the inside, within a few feet of the top, or under the eaves of houses: it is curiously constructed, of a cylindrical shape, plastered with mud, mixed with straw and hair, and lined with feathers; it is attached to the sides or corners of the chimney, and is sometimes a foot in height, open at the top. Swallows soon become familiar after they have been caught[1].

2. The *house martin* (*hirundo urbica*), known by its white breast and black back, glossed with blue, visits us in great numbers. It builds under the eaves of houses, or close by the sides of the windows; and constructs its nest of mud and straw, lining it with feathers.

[1] One that had been taken and slightly wounded in the wing, so as to prevent its flying away, *sat for its portrait* to Mr. Bewick: it remained on the bench while the wood-cut was engraved, and, from its having been fed by the hand with flies, while sitting, watched every motion; and at every look of the eye, when pointedly directed towards it, ran close up to the graver, in expectation of a fresh supply of food.—(*British Birds*, vol. 1, p. 264, 5.)

3. The *sand martin* (*hirundo riparia*) is the smallest of our swallows, as well as the least numerous of them. It frequents the steep, sandy banks, in the neighbourhood of rivers, in the sides of which it makes deep holes, and places the nest at the end: this is carelessly constructed of straw, dry grass, and feathers.

4. The *swift* (*hirundo apus*) is the largest species, measuring nearly eight inches in length. Swifts are almost continually on the wing; they fly higher, and wheel with bolder wing than the swallows, with which they never intermingle. The life of the swift seems to be divided into two extremes; the one of the most violent exertion, the other of perfect inaction; for they either shoot through the air, or remain close in their holes. These birds build their nests in lofty steeples and high towers, and sometimes under the arches of bridges. The swift has been noticed at the Cape of Good Hope, and it probably visits the more remote regions of Asia.

The next bird which appears, is that sweet warbler, the *motacilla luscinia*, or *nightingale*.

> Within the grove's
> Thick foliage perched, she pours her echoing voice,
> Now deep, now clear, still varying the strain.

Although the nightingale is common in this country, it never visits the northern parts of our island, and is but seldom seen in the western counties of Devonshire and Cornwall. It leaves us sometime in the month of August, and makes its regular return in the beginning of April. The nightingale is supposed, during that interval, to visit the distant regions of Asia; this is probable, as these birds do not winter in any part of France, Germany, Italy, Greece, &c. neither does it appear that they stay in Africa, but are seen at all times in India, Persia, China, and Japan. This delightful songster is a solitary bird, and never unites in flocks, like many of the smaller birds, but hides itself in the thickest part of the bushes, and sings, generally, in the night:

Far and near,
In wood and thicket over the wide grove,
They answer and provoke each other's songs—
With skirmish and capricious passagings,
And murmurs musical, and swift *jug, jug*,
And one low piping sound more sweet than all—
Stirring the air with such a harmony,
That, should you close your eyes, you might almost
Forget it was not day!

The manner in which young birds practise their songs as learners, is a circumstance not at all mentioned by any of our poets. This *recording*, which lasts for ten or twelve months, is well known to bird-catchers, and is accurately described by the Hon. Mr. Daines Barrington.—'This first essay does not seem to have the least rudiments of the future song; but, as the bird grows older and stronger, one may begin to perceive what the nestling is aiming at. Whilst the scholar is thus endeavouring to form his song, when he is once sure of a passage, he commonly raises his tone, which he drops again when he is not equal to what he is attempting; just as a singer raises his voice, when he not only recollects certain parts of the tune with precision, but knows that he can execute them. What the nestling is not thus thoroughly master of, he hurries over, lowering his tone, as if he did not wish to be heard, and could not yet satisfy himself.'—(*Phil. Tr.* vol. lxiii, part 1, pp. 250, 1.)

Pliny, in his account of the nightingale, minutely describes the state of a learner of that species.—'The younger sort meditate and receive lessons for their imitation. The scholar listens with great attention, and repeats; and each is silent by turns. An attempt to mend in a corrected passage may be perceived, and a kind of reprehension in the teacher[1].'

[1] Meditantur aliæ juniores, versusque, quos imitentur, accipiunt. Audit discipula intentione magna, et reddit: vicibusque reticent. Intelligitur emendatæ correptio, et in docente quædam reprehensio.

'The tone of the nightingale (continues Mr. Barrington) is infinitely more mellow than that of any other bird, though at the same time, by a proper exertion of its musical powers, it can be excessively brilliant. When this bird[1] *sang its song round*, in its whole compass, I have observed sixteen different beginnings and closes, at the same time that the intermediate notes were commonly varied in their succession, with such judgment as to produce a most pleasing variety.

'The next point of superiority in a nightingale, is its continuance of song, without a pause, which I have observed sometimes not to be less than twenty seconds. Whenever respiration, however, became necessary, it was taken with as much judgment as by an opera singer. But it is not only in tone and variety that the nightingale excels: the bird also sings (if I may so express myself) with superior judgment and taste. I have therefore commonly observed that my nightingale began softly, like the antient orators; reserving its breath to swell certain notes, which by this means had a most astonishing effect, and which eludes all verbal description.'—(*Phil. Tr.* vol. lxiii, pp. 285, 6.)

Thomas Warton, in his delightful Ode, entitled '*The First of April*,' thus depicts some of the appearances of nature at the beginning of the month:

Scarce a sickly straggling flower
Decks the rough castle's rifted tower;
Scarce the hardy *primrose* peeps
From the dark dell's entangled steeps;
O'er the field of waving *broom*
Slowly shoots the golden bloom:

And, but by fits, the furze-clad dale
Tinctures the transitory gale.
While from the shrubb'ry's naked maze,
Where the vegetable blaze
Of Flora's brightest broidery shone,
Every chequered charm is flown;

[1] A nightingale caged by Mr. Barrington.

Save that the *lilac* hangs to view
Its bursting gems in clusters blue.

—

Scant along the ridgy land
The *beans* their new-born ranks expand:
The fresh-turned soil with tender blades
Thinly the sprouting *barley* shades:
Fringing the forest's devious edge,
Half-robed appears the *hawthorn* hedge;
Or to the distant eye displays
Weakly green its budding sprays.

That beautiful little bird, the wryneck (*jynx torquilla*), makes its appearance about the middle of the month, preceding the cuckoo by a few days. Its food consists of ants and other insects, of which it finds great abundance lodged in the bark and crevices of trees[1],

The cuckoo now on every tree
Sings *cuc-koo—cuc-koo*.

The well known cry of the *cuculus canorus* is heard soon after the wryneck, and ceases the latter end of June; its stay is short, the old cuckoos being said to quit this country early in July. Cuckoos build no nest, and what is more extraordinary, the female deposits her solitary egg in the nest of another bird, by whom it is hatched. The nest she chooses for this purpose is generally the hedge-sparrow's, though she occasionally resorts to that of the water-wagtail, titlark, &c. This bird flies from hedge to hedge, and

sings her idle song
Monotonous, yet sweet, now here, now there;
Herself but rarely seen.

'The cuckoo begins early in the season, with the interval of a *minor third*; the bird then proceeds to a major *third*, next to a *fourth*; then a *fifth*; after which his voice breaks out without attaining a *minor*

[1] The structure of this bird's tongue is very remarkable; it is of considerable length, of a cylindrical form, and capable of being pushed forwards, and drawn into its bill again; it is furnished with a horny substance at the end, with which it secures its prey, and brings it to its mouth.

sixth.'—(For many curious particulars relative to this bird, see *Phil. Tr.* vol. lxxviii, pp. 219-237.)

Heywood, in his Epigram 'Of Use,' 1587, alludes to this remarkable circumstance:

An Aprill, the koocoo can sing her song by rote,
In June, of tune, she cannot sing a note:
At first, koo-coe, koo-coo, sing still can she do,
At last kooke, kooke, kooke; six kookes, to one koo.

The schoolboy, wandering in the wood,
To pull the flowers so gay,
Starts thy curious voice to hear,
And imitates thy lay. LOGAN.

The other summer-birds of passage which arrive this month, make their appearance in the following order: the ring-ousel (*turdus torquatus*[1]), the red-start (*motacilla phœnicurus*), frequenting old walls and ruinous edifices; the yellow wren (*motacilla trochilus*); the swift, already noticed; the whitethroat (*motacilla sylva*[2]); the grass-hopper lark (*alauda trivialis*), the smallest of the lark kind[3]; and, lastly, the willow-wren, which frequents hedges and shrubberies, and feeds on insects, in search of which it is continually running up and down small branches of trees.

The tenants of the air, are, in this month, busily employed in forming their temporary habitations, and in rearing and maintaining their offspring. Their mode of building, the materials they use, as well as the situations they select, are as various as the different kinds of birds, and are all admirably adapted to their several wants and necessities.

[1] Found chiefly in the wild and mountainous districts of England. Its habits are similar to those of the blackbird.

[2] This bird is often heard in the midst of a thick covert to utter a pretty constant grating call of *cha, cha, cha*, which it leaves off as soon as it is disturbed, flitting before the passenger from bush to bush, singing as it flies along.

[3] It skulks in hedges and thick bushes, and runs like a mouse through the bottom of the thorns, evading the sight. The tones of the cock-bird in the spring are soft, clear, and melodious.

Some to the holly-hedge
Nestling repair, and to the thicket some;
Some to the rude protection of the thorn
Commit their feeble offspring: the cleft tree
Offers its kind concealment to a few,
Their food its insects, and its moss their nests.
Others apart, far in the grassy dale,
Or roughening waste, their humble texture weave.
But most in woodland solitudes delight,
In unfrequented glooms, or shaggy banks,
Steep, and divided by a babbling brook,
Whose murmurs soothe them all the live-long day,
When by kind duty fixed. Among the roots
Of hazel, pendant o'er the plaintive stream,
They frame the first foundation of their domes;
Dry sprigs of trees, in artful fabric laid,
And bound with clay together. Now 'tis nought
But restless hurry thro' the busy air,
Beat by unnumbered wings. The swallow sweeps
The slimy pool, to build his hanging house
Intent. And often, from the careless back
Of herds and flocks, a thousand tugging bills
Pluck hair and wool; and oft, when unobserved,
Steal from the barn a straw: till soft and warm,
Clean and complete, their habitation grows.

About the middle of this month, the bittern (*ardea stellaris*)

booms along the sounding marsh,
Mixt with the cries of Heron and Mallard harsh.

This hollow *booming* noise is made during the night in the breeding season, from its swampy retreats. Towards the end of the month, the black-cap (*motacilla atricapilla*) begins its song. This bird has usually, says Mr. White, a full, sweet, deep, loud, and wild pipe; yet the strain is of short continuance, and its motions desultory. In Norfolk the black-cap is termed the mock-nightingale.

The progress of vegetation is general and rapid in this month. The blossoms of trees present to the eye a most agreeable spectacle, particularly in those counties which abound with orchards. The black-thorn (*prunus spinosa*) is the first that puts forth

its flowers; a host of others follow, among which may be named the ash (*fraxinus excelsior*), ground-ivy (*glecoma hedaracea*), the box-tree (*buxus sempervirens*), the pear-tree (*pyrus communis*), the apricot, the peach, nectarine, the wild and garden cherry, and the plum; gooseberry and currant trees; the hawthorn (*cratægus oxycantha*), the apple-tree (*pyrus-malus sativus*), and the sycamore (*acer pseudo-platanus.*) These elegant blossoms, while they yield the most exquisite delight to the fervent admirer of the beauties of nature, afford to the moralist a never-failing source of the most pleasing reflections:—

Fair pledges of a fruitful tree,
Why do you fall so fast?
Your date is not so past,
But you may stay yet here awhile,
To blush and gently smile;
And go at last.

What! were you born to be
An hour or two's delight;
And so to bid good night?
'Twas pity Nature brought you forth
Merely to show your worth,
And lose you quite.

But you are lovely Leaves, where we
May read how soon things have
Their end, though ne'er so brave:
And after they have shown their pride,
Like you awhile they glide
Into the grave. HERRICK.

The elm (*ulmus campestris*), the beech (*fagus sylvatica*), and the larch (*pinus-larix rubra*), are now in *full leaf*. Many and lovely are the flowers which are showered, in profusion, from the lap of April:

The *jonquil* loads with potent breath the air,
And rich in golden glory nods; there too,
Child of the wind, *anemoné* delights;
Or, in its scarlet robe of various dies,
Ranunculus, reflecting every ray;
The *polyanthus*, and with prudent head
The *crown-imperial*, ever bent on earth,
Favouring her secret rites and pearly sweets. BIDLAKE.

Other flowers which adorn our fields, at this time, are the checquered daffodil (*fritillaria meleagris*); the primrose; the cowslip (*primula veris*); the cuckoo flower (*cardamine pratensis*); and the harebell (*hyacinthus non scriptus*). The yellow star of Bethlehem (*ornithogalum luteum*) in woods; the vernal squill (*scilla verna*) among maritime rocks; and the wood sorrel (*oxalis acetosella*), are now in full flower.

Various kinds of *insects* are seen 'sporting in the sun-beams,' and living their 'little hour.' Spiders' webs are observed on the surface of the ground; the *iulus terrestris* appears, and the death-watch (*termes pulsatorius*) beats[1] early in the month. About this time the wood-ant (*formica herculeana*) begins to construct its large conical nest, frequently two feet or more in height, and formed chiefly of fir-leaves and other dry vegetable fragments. The nest is internally distributed into several paths or tubes, converging towards the central part, and opening externally: in the middle or centre reside the young, or larvæ, which are nursed by the neutral ants, and are occasionally brought to the surface, in order to be more within the influence of the air and sunshine for a certain time, after which they are again conveyed

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1 This diminutive insect, which occasions so much alarm to the superstitious, is of a whitish colour, and is found, during the summer months, in houses, particularly where the wainscot is in any way decayed. The long-continued sound, which it makes, exactly resembles the ticking of a watch, and is considered by Mr. Derham to be analogous to the call of birds to their mates during the breeding season.

Then woe be to those in the house who are sick,
For, sure as a gun, they will give up the ghost,
If the maggot cries *click*, when it scratches the post:
But a kettle of scalding-hot water injected,
Infallibly cures the timber affected;
The *omen* is broken, the danger is over,
The maggot will die, and the sick will recover. SWIFT.

to the bottom or centre. When full-grown, they envelop themselves in oval, white, silken cases, in which they undergo their change into chrysalis, and at length emerge in their complete form. The males and females are winged, and the females are much larger than the males. A curious circumstance is recorded by Mr. Bingley, of the *horse-emmet* or great *hill-ant*, which he supposes to be the same with the species just mentioned. 'A gentleman of Cambridge one day remarked an ant dragging along what, with respect to its strength, might be denominated a piece of timber. Others were severally employed, each in its own way. Presently this little creature came to an ascent, where the weight of the wood seemed for a while to overpower him: he did not remain long perplexed with it; for three or four others, observing his dilemma, came behind and pushed it up. As soon, however, as he had got it on level ground, they left it to his care, and went to their own work. The piece he was drawing happened to be considerably thicker at one end than the other. This soon threw the poor fellow into a fresh difficulty: he unluckily dragged it between two bits of wood. After several fruitless efforts, finding it would not go through, he adopted the only mode that even a reasonable being, in similar circumstances, could have taken; he came behind it, pulled it back again, and turned it on its edge; when, running again to the other end, it passed through without the least difficulty.'

The shell-snail comes out in troops; the stinging-fly *(conops calcitrans)* and the red-ant *(formica rubra)* appear. The mole-cricket *(gryllus gryllotalpa)* is the most remarkable of the insect tribe seen about this time. It measures more than two inches in length, and burrows under ground in the manner of a mole; its fore legs are excessively strong, and its broad feet are divided into several sharp claw-shaped segments. The mole-cricket emerges from its subterraneous retreats only by night, and feeds on vege-

tables; devouring the young roots of grasses, corn, and various esculent plants, and committing great devastation in gardens. The black slug (*limax ater*) abounds at this season. The blue flesh-fly (*musca vomitoria*), the cabbage butterfly (*papilio brassicæ*), and the dragon-fly (*libellula*), are frequently observed towards the end of the month. The great variegated *libellula* (*libellula varia* of Shaw), which appears, *principally*, towards the decline of summer, is an animal of singular beauty: its general length is about three inches from head to tail, and the wings, when expanded, measure nearly four inches from tip to tip.

Fish, in quest of food, leave their winter retreats, and again become the prey of the angler:

> Beneath a willow long forsook,
> The *fisher* seeks his customed nook;
> And bursting through the crackling sedge,
> That crowns the current's caverned edge,
> He startles from the bordering wood
> The bashful *wild-duck*'s early brood.

Dry weather is still acceptable to the farmer, who is employed in sowing various kinds of grain, and seeds for fodder, as buck-wheat, lucerne, saintfoin, clover, &c. The young corn and springing grass, however, are materially benefited by occasional showers. What a charming picture of rustic employments, at this season, has Bloomfield given us in his 'SPRING!' Giles's morning walk to his accustomed labours is thus beautifully described:

> His own shrill matin joined the various notes
> Of nature's music, from a thousand throats:
> The *blackbird* strove with emulation sweet,
> And Echo answered from her close retreat;
> The sporting *white-throat*, on some twig's-end borne,
> Poured hymns to freedom, and the rising morn;
> Stopt in her song, perchance, the starting *thrush*
> *Shook a white shower from the black-thorn bush,*
> *Where dew-drops thick as early blossoms hung,*
> *And trembled as the minstrel sweetly sung.*
> Across his path, in either grove to hide,
> The timid *rabbit* scouted by his side;
> Or *pheasant* boldly stalked along the road,
> Whose gold and purple tints alternate glowed.

May.

THIS month was so called by Romulus from respect to the senators and nobles of his city, who were named *Majores;* as the following month was termed *Junius*, in honour of the youth of Rome, *in honorem juniorum*, who served him in the war: others derive May from *Maia*, the mother of Mercury, sacrifices being offered to her on the first of this month. 'May must be drawn with a sweet and amiable countenance, clad in a robe of white and green, embroidered with daffadilles, hawthorn, blew-bottels; upon his head a garland of white, damask, and red roses; in one hand a lute, upon the fore-finger of the other a nightingale, with the sign *Gemini.*'—(*Peacham*, p. 418, 19.)

'The pleasant month of May, they (the Saxons) termed *tri-milki*, because in that moneth they began to milke their kine three times in the day.'—(*Verstegan*, p. 60.)

Remarkable Days.

1.—MAY-DAY.

ANTIENTLY, all ranks of people went out a maying early on the first of this month. 'The juvenile part of both sexes, in the north, were wont to rise a litle after midnight, and walk to some neighbouring wood, accompanied with music and the blowing of horns; where they break down branches from the trees, and adorn them with *nosegays* and *crowns of flowers*. When this is done, they return with their booty homewards, about the rising of the sun, and make their doors and windows to triumph in the flowery spoil. The after part of the day is chiefly spent in dancing round a tall pole, which is called a *May-pole;* which being placed in a convenient part of the village, stands there, as it were, consecrated to the *goddess of flowers*, without the least violation offered it in the whole circle of the year.'

One of our own poets thus mentions the May-pole ceremonies :—

> Your May-pole deck with flowery coronal;
> Sprinkle the flowery coronal with wine;
> And in the nimble-footed galliard, all,
> Shepherds and shepherdesses, lively join.
> Hither from village sweet, and hamlet fair,
> From bordering cot and distant glen repair:
> Let youth indulge its sport, to eld[1] bequeath its care.
>
> —
>
> With heel so nimble wear the springing grass,
> To shrilling bagpipe, or to tinkling brass;
> Or foot it to the reed.

Old John Stow tells us, that on *May-day* in the morning, 'every man, except impediment, would

[1] Old age.

walk into the sweet meadows and green woods, there to rejoice their spirits with the beauty and savour of sweet flowers, and with the harmony of birds praising God in their kind.' Henry VIII *rode a maying* from Greenwich to Shooter's Hill, with his Queen Katherine, accompanied by many lords and ladies.

In Herrick's Hesperides are the following allusions to May-day customs:—

Come, my Corinna, come: and comming, marke
How each field turns a street; each street a park
Made green and trimmed with trees: see how
Devotion gives each house a bough,
Or branch; each porch, each doore, ere this,
An arke, a tabernacle is
Made up of white-thorne, neatly enterwove.

* * *

A deale of youth ere this is come
Back, and with white-thorne laden home,
Same have dispatched their cakes and creame,
Before that we have left to dreame.

The May-day ceremonies are merely a relic of heathen customs; as the Romans on the four last days of April, and on the first of May, held their *Floralia*, or games in honour of Flora, the goddess of fruits and flowers.

1.—SAINT PHILIP *and* SAINT JAMES THE LESS.

Philip was born at Bethsaida, near the sea of Tiberias, the city of Andrew and Peter. Of his parents and trade the Gospel takes no notice; though he was most probably a fisherman. He was one of the first disciples, and an apostle. *John* i, 43—47. There are but few passages relating to him in the history of the Gospel. In the distribution of the several provinces made by the apostles, we learn that Upper Asia was the country assigned to him; and that he also preached and planted Christianity in Scythia, where he obtained many converts, whom he baptized into the profession of the Christian

faith. Philip also performed several miracles, in confirmation of his mission; healing diseases, dispossessing dæmons, settling churches, and appointing them guides and ministers. Having for many years successfully discharged the duties of the apostolic office, towards the close of his life, he came to Hierapolis, a city of Phrygia, now called by the Turks *Pambne Kulasi*. In Phrygia it was that this apostle is said to have suffered martyrdom, by being fastened to a cross, and stoned to death.

James the Less, called also *James the Just*, and by the apostle *Paul James*, the Lord's brother, *Gal.* i, 19, was the son of Joseph, afterwards husband to the Virgin Mary, as is probable by his first wife. Hence the blessed Virgin is called Mary, the mother of James and Joses. *Matt.* xxviii, 56. And by *Mark*, chap. xv, 40, the mother of James the Less, and of Joses, and of Salome; and the same person is called the mother of Jesus, *John* xix, 25. There is no mention in the Scriptures of the place of his birth, or of his trade, or way of life, before he was called to be a disciple and apostle, nor any particular account of him during our Saviour's life. After our Lord's resurrection, he was honoured with a manifestation of his Master, 1 *Corinth.* xv, 7.—After that, he was seen by James. This apostle wrote the canonical Epistle of James. He suffered martyrdom in the former part of the year 62, in the ninety-sixth year of his age. The Scribes and Pharisees, bearing a mortal hatred to St. James, hurried him up into a gallery of the temple, and attempted to make him renounce the Gospel before the assembled multitude. Instead, however, of denying Christ, he made a public confession of him before the people, who almost unanimously cried out *Hosanna to the Son of David!* This so enraged the Jews, that they threw him headlong from the high place where he stood. Not being quite dead, however, he prayed to God to forgive his

murderers. This prayer doubly enraged his malicious persecutors, and one of them, a *fuller* by profession, immediately despatched him with his staff.

3.—INVENTION OF THE CROSS.

The Romish church celebrates this day as a festival, to commemorate the *invention* or finding of the *cross*. Helena, the mother of Constantine the Great, being warned in a dream to search for the cross of Christ at Jerusalem, went thither, and employed many days at Golgotha in digging for it. After opening the ground to a great depth, she found *three crosses*, which Helena concluded were the crosses of our Saviour, and the two malefactors who were crucified with him. Being at a loss, however, to ascertain which was the real cross of Christ, she ordered them all to be applied to a dead person. Two of them, as the legend relates, had no effect; but the third raised the corpse to life, which was not only a probable sign, but an absolute demonstration to *Helena*, that *that* was the *cross* she so diligently sought. No sooner was the secret discovered, than every one was anxious to procure a piece of it; so great was this desire, that in the time of Paulinus, a disciple of St. Ambrose, and Bishop of Nola, in the year 420, there were more reliques of the cross than there was of the original wood. And that venerable father asserts, that it was miraculously augmented: 'It very kindly afforded,' says he, 'wood to men's importunate desires, without any loss of its substance.'

6.—JOHN EVANGELIST, A. P. L.

John the Evangelist, so called from the Greek term Εὐάγγελος, the messenger of glad tidings, was a Galilean by birth, the son of Zebedee and Salome, the younger brother of James, but not of him that was surnamed the Just, and who was the brother of our Lord. His brother James and he were surnamed by Jesus, the *Sons of Thunder*, meaning the principal ministers of the Gospel, and John was more en-

dearer to him than any of his disciples. After remaining some time with the Virgin Mary in his house at Jerusalem, to whose care she was committed by our Saviour probably till she died, he travelled to preach the Gospel in Asia Minor, and was perhaps the founder of the seven churches in Asia, Ephesus, Smyrna, &c. mentioned in his Apocalypse. From Ephesus he was carried prisoner to Rome upon account of the doctrines he taught there. John was condemned to be thrown into a cauldron of boiling oil, but, being miraculously preserved, he came out of it alive. This circumstance took place before the gate of Latina, *ante port. lat.*; hence the abbreviation, A. P. L. After this, he was banished to the isle of Patmos, where he wrote his Revelations; but being recalled by the Emperor Nero, he returned to Ephesus, and there penned his three Epistles. Lastly, he composed his Gospel, to supply the omissions of the other evangelists, some few years before his death. He survived to the reign of Trajan, and died about 90 years of age.

15.—ROGATION SUNDAY.

This day takes its name from the Latin term *rogare*, to ask; because, on the three subsequent days, *supplications* were appointed by Mamertus, Bishop of Vienna, in the year 469, to be offered up with fasting to God, to avert some particular calamities that threatened his diocess.

19.—ASCENSION DAY, OR HOLY THURSDAY.

From the earliest times, this day was set apart to commemorate our Saviour's ascension into heaven. All processions on this, and the preceding rogation days, were abolished at the reformation; yet, in order to retain the '*perambulations of the circuits of parishes*,' ELIZABETH enjoined the following ordinances: First, that the people should once a-year, namely on this day, walk about the parishes, with the curate, and other substantial inhabitants, as

usual, and at their return to church make their common prayers. Secondly, that the *curate* in those perambulations, should, at certain convenient places, admonish all those who accompanied him to return thanks to the Almighty for the prospect they had of God's benefits, and for the increase of his fruits upon the face of the earth; and sing some psalm suitable to the occasion. At the close he was to pronounce this denunciation: *Cursed be he who translateth the bounds, &c. of his neighbour.* In London, on this day, the minister, accompanied by the churchwardens, and a number of boys, with wands, walks in procession, and *beats the bounds* of the parish. But this is not always practised, nor in every year.

19.—SAINT DUNSTAN.

Dunstan was a native of Glastonbury, and nobly descended; Elphegus, Bishop of Winchester, and Athelm, Archbishop of Canterbury, being his uncles; he was also related to King Athelstan. He was a skilful painter, musician, and an excellent forger and refiner of metals: qualifications so much above the genius of the age in which he lived, that he was first reputed a conjurer, and afterwards a saint. His uncle Athelm recommended him to the court of Athelstan, where he continued for some time; but, disgusted with the life of a courtier, he took the monastic habit, and retired to Glastonbury. Here he built for himself a small cell, 5 feet long, and 2½ broad, with an oratory, adjoining the wall of the great church dedicated to the Virgin Mary. In this hermitage he spent his time in prayer and fasting; he had also his hours for manual labour, in which he manufactured crosses, vials, and sacred vestments: he also painted and copied good books.

Dunstan was promoted to the see of Worcester by King Edgar; he was afterwards Bishop of London, and Archbishop of Canterbury. He died in 988, in the 64th year of his age, and in the 27th of his archiepiscopal dignity. He was successively

confessor to Edred, Edwy, Edgar, and Edward, kings of the West Saxons, and was bold enough to reprove his royal masters, if they transgressed the bounds of decorum. Edgar having been guilty of a scandalous crime, the Archbishop enjoined him a seven years' penance, during which term he was never to wear his crown, was to fast twice a week, to give large alms, and to found a nunnery: the king submitted to all these conditions, and endowed a rich monastery of nuns at Shaftesbury. In 973 the term of the penance expired, and Edgar was re-crowned by Dunstan. The monks relate, that he made himself a bell at Glastonbury, all of iron, at his own forge; that his harp played spontaneously without a touch; and that Satan appearing to him in the shape of a beautiful female, he took this lady by the nose with a pair of red-hot tongs.

19.—QUEEN CHARLOTTE BORN.

Her present Majesty (Princess Charlotte, of Mecklenburgh Strelitz) was born on the 19th of May, 1744; but her birth-day is celebrated on the 18th of January.

26.—AUSTIN.

This *English apostle*, as he is termed, was commissioned by Pope Gregory the Great to convert the Saxons. He was created archbishop of Canterbury in 556, and died about the year 610.

27.—VENERABLE BEDE.

Bede was born at Yarrow in Northumberland, in 673, and afterwards instructed in the Greek and Latin languages, in which he made a surprising proficiency. He was author of several very learned philosophical and mathematical tracts; as, also, of long and laborious comments on the Scriptures. His grand work, however, is the Ecclesiastical History of the Saxons. Being a *monk*, he studied in his cell, where spending more hours, and to better purpose than most of the *monks* did, it was re-

ported that he never left it. So much attached was he to his retirement, that he would not quit it for any preferment at Rome, to which the *pope* had often invited him. Bede has obtained the title of *Venerable*, for his profound learning and unaffected piety, and not on account of any celebrity for miraculous and angelic operations.

29.—WHIT-SUNDAY.

On Whit-Sunday, or *White-Sunday*, the *Catechumens*, who were then baptized, as well as those who had been baptized before at Easter, appeared, in the antient church, in *white garments*. The Greeks, for the same reason, call it *Bright Sunday;* on account of the number of bright white garments which were then worn. The name of this Sunday, in the old Latin church, was *Dominica in Albis*, as was the Sunday next after Easter, on the same occasion. On this day, the Holy Ghost descended upon the apostles and other Christians, in the visible appearance of fiery tongues.

29.—KING CHARLES II RESTORED.

On the 8th of May, 1660, Charles II was *proclaimed* in London and Westminster, and afterwards throughout his dominions, with great joy and universal acclamations. On the 16th he came to the Hague; the 23d he embarked with his two brothers for England, and landed at Dover on the 25th, where he was received by General Monk, and some of the army. He was then attended by numbers of the nobility and gentry to Canterbury, and on the 29th he made his magnificent entry into London. This day is also his birth-day.

In some parts of England it is customary for the common people to wear oak leaves covered with leaf-gold in their hats, in commemoration of the concealment of Charles II in an oak tree, after the battle of Worcester. In this tree, not far from Boscobel House, the king and his companion Colo-

nel Carlos resorted, when they thought it no longer safe to remain in the house; climbing up by the henroost ladder, and the family giving them victuals on a hut-hook. This tree was some time afterwards inclosed with a brick wall, and the following inscription, on a marble tablet, placed over the door:

> "Felicissimam arborem quam in asylum potentissimi Regis Caroli II, Deus O. M. per quem reges regnant hic crescere voluit, nam in perpetuam rei tantæ memoriam, quam specimen firmæ in reges fidei, muro cinctam posteris commendant Basilius et Jana Fitzherbert.
>
> Quercus amica Jovi."

From this tree Charles carried some acorns, and set them himself in St. James's Park, where he took pleasure in watering them. The original oak has long since paid the debt of nature, and its place is said to be supplied by a thriving plant.

> Blest Charles then to an OAK his safety owes;
> The ROYAL OAK, which now in songs shall live,
> Until it reach to Heaven with its boughs;
> Boughs that for loyalty shall garlands give.

The king's strange dress on this occasion is thus described in a *note* to his *own Narative* of his wonderful Escape, pp. 29-31. 'He wore a very greasy old grey steeple-crowned hat, with the brims turned up, without lining or hatband: a green cloth coat, threadbare, even to the threads being worn white, and breeches of the same, with long knees down to the garter; with an old leathern doublet, a pair of white flannel stockings next to his legs, which the king said were his boot stockings, their tops being cut off to prevent their being discovered, and upon them a pair of old green yarn stockings, all worn and darned at the knees, with their feet cut off; his shoes were old, all slashed for the ease of his feet, and full of gravel; he had an old coarse shirt, patched both at the neck and hands; he had no gloves, but a long thorn stick, not very strong, but crooked three or four several ways, in his hand;

his hair cut short up to his ears, and hands coloured; his majesty refusing to have any gloves, when Father Hodlestone offered him some, as also to change his stick.'

30, 31.—WHIT-MONDAY *and* WHIT-TUESDAY.

These days are observed as festivals, for the same reason as the Monday and Tuesday in Easter. Their religious character, however, is almost obsolete, and they are now kept as holidays, in which the lower classes still pursue their favourite diversions.

'The *Whitsun ales* at this time of the year (observes Mr. Douce) are conducted in the following manner: Two persons are chosen, previously to the meeting, to be lord and lady of the ale, who dress as suitably as they can to the characters they assume. A large empty barn, or some such building, is provided for the lord's hall, and fitted up with seats to accommodate the company. Here they assemble to dance and regale in the best manner their circumstances and place will afford; and each young fellow treats his lady with a ribbon or favour. The lord and lady honour the ball with their presence, attended by the steward, sword-bearer, purse-bearer, and mace-bearer, with their several badges or ensigns of office. They have likewise a train-bearer or page, and a fool or jester, dress in a party-coloured jacket, whose ribaldry and gesticulation contribute not a little to the entertainment of some part of the company. The lord's music, consisting of a pipe and tabor, is employed to conduct the dance. Some people think this custom is a commemoration of the antient *Drink-lean*, a day of festivity formerly observed by the tenants and vassals of the lord of the fee within his manor, the memory of which, on account of the jollity of those meetings, the people have thus preserved ever since. The glossaries inform us, that this Drink-lean was a contribution of tenants towards a potation or *Ale*, provided to entertain the lord or his steward.'

At Kidlington, in Oxfordshire, the custom is, that, on Monday after Whitsun week, there is a fat live lamb provided; and the maids of the town, having their thumbs tied behind them, run after it; and she that with her mouth takes and holds the lamb, is declared *Lady of the Lamb;* which being dressed, with the skin hanging on, is carried on a long pole before the lady and her companions to the green, attended with music, and a Morisco dance of men and another of women, where the rest of the day is spent in dancing, mirth, and merry glee. The next day the lamb is part baked, boiled, and roast, for the Lady's Feast, where she sits majestically at the upper end of the table, and her companions with her, with music and other attendants, which ends the solemnity.—*(Blount's Fragmenta Antiq., by Beckwith,* p. 281.*)*

In Poor Robin's Almanack for 1676, stool-ball and barley-break are spoken of as Whitsun sports. In the Almanack for the following year, in June, opposite Whitsunday and Holidays, we read:—

At Islington
A fair they hold,
Where cakes and ale
Are to be sold.

At Highgate and
At Holloway,
The like is kept
Here every day.

At Totnam Court
And Kentish Town,
And all those places
Up and down.

Astronomical Occurrences.

In our present calendars, the days of the week are distinguished by the first seven letters of the alphabet, A, B, C, D, E, F, G. The letter A is always put for the first day of the year; B, for the second; C, for the third; and so on in succession to the seventh. Should the 1st of January fall on a Sunday, the dominical or Sunday letter for that year will be A, the Monday letter B, and so for the rest throughout the year. If the year contained 364 days, making an exact number of weeks, it is obvious that A would, for ever, have been the dominical letter. The year, however, containing one day more, it follows that the

dominical letter of the succeeding year will be G. For as there are 365 days in a year, Sunday being the first day of the year, it will also be the last, and the first Sunday in the following year will fall on the seventh day, which will be marked G. Thus the Sunday letters go back from A to G; from G to F; from F to E, and so on. If every year were to consist of 365 days, the process would be regular, and a cycle of seven years would suffice to restore the same letters to the same days as before; but the intercalation of a day every fourth year occasions a variety. The bissextile or leap year, containing 366 days, will throw the Sunday letter back two letters; so that in the year 1815 the Sunday letter will be A, but in 1816, that being leap year, it will be G till the end of February, and then it will be F to the end of the year. Hence twenty-eight years must elapse before a complete revolution can take place in the dominical letter; and a table constructed to show the dominical letters for any given years, of one of these cycles, will answer for the corresponding years in every successive cycle.

These observations are introduced as preliminary to the finding Easter Sunday, which is not only one of the most considerable festivals in the Christian calendar, but that which regulates and determines the time of all other moveable feasts. The rule for the celebration of Easter, fixed by the Council of Nice, is that it be held on the Sunday which falls next after the full Moon following the 21st of March, that is the Sunday which falls next after the first full Moon after the vernal equinox. The reason of this decree was, that Christians might avoid celebrating their Easter at the same time that the Jews celebrate their Passover, which was always held the very day of the full Moon.

The only difficulty, therefore, is to find the day when the paschal full Moon occurs. The rules for finding

this, and also the dominical letter[1], we might readily insert; but as they require some calculation, most of our readers will probably prefer a table that renders the finding of Easter Sunday very easy, from the present period to the year 1900.

Epacts.	Paschal full Moons.	Epacts.	Paschal full Moons.
x.	13th April - - - E	ix.	4th April - - - C
xi.	2d April - - - A	xx.	24th March - - F
xxii.	12th March - - D	i.	12th April - - - D
iii.	10th April - - - B	xii.	1st April - - - G
xiv.	30th March - - E	xxiii.	21st March - - C
xxv.	18th April - - - C	iv.	9th April - - - A
vi.	7th April - - - F	xv.	29th March - - D
xvii.	27th March - - B	xxvi.	17th April - - - B
xviii.	15th April - - - G	vii.	6th April - - - E
		xviii.	26th March - - A

We have already shown that the epact is found by means of the golden number; thus, for the year 1814,

The golden number is $\left(\frac{1814+1}{19} = 95 \text{ and } 10 \text{ over}\right)$ 10.

The epact is $\left(\frac{10-1 \times 11}{30} = 3 \text{ and } 9 \text{ over}\right)$ 9.

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[1] To find the dominical letter for any year.—*Rule:* Divide the hundreds of the given year by 4, and subtract twice the remainder from 6; then the sum of this last remainder, the odd years, and their fourth, divided by 7, will leave a remainder which, being deducted from 7, shows the index of the dominical letter. Thus, for the year 1814,

$\frac{18}{4} = 4$ and 2 over $\Big\}$ and 2×2 subtracted from 6 leaves 2.

Last remainder -	2
Odd years - - -	14
¼ odd years - - -	3
	19

$\frac{19}{7} = 2$ and 5 over

and $7 - 5 = 2$.

Two, then, is the index of the dominical letter; and as 1 is the index of A, 2 must be the index of B, which is the dominical letter for the year 1814.

Now to find Easter with these data and the foregoing table: we have the epact 9, which corresponds with the 4th of April, whose weekly letter is c, but the Sunday letter of 1814 is B; therefore the first Sunday B, after the 4th of April c, will be on the 10th of April, which is Easter Sunday.

Having obtained Easter-day, the other feasts are easily calculated, thus:—

Epiphany, or Twelfth-day, is always on the 6th of January.
Septuagesima Sunday is 9 weeks *before* Easter.
Shrove Sunday, 7 weeks *before* Easter.
Ash Wednesday, 3 days *after* Shrove Sunday.
Easter term begins a fortnight *after* the Wednesday in Easter-week.
Rogation Sunday is 6 weeks *after* Easter.
Ascension-day is 39 days *after* Easter Sunday.
Whitsunday is 7 weeks *after* Easter-day.
Trinity Sunday is the next *after* Whitsunday.
Trinity term begins the Friday *after* Trinity Sunday, and ends on the Wednesday fortnight *after*.
The beginning and end of Hilary and Michaelmas terms are fixed.
Advent is always the Sunday nearest the 30th of November, whether before or after; and the Sundays *after Trinity*, marked in the calendar, are those between Trinity Sunday and Advent Sunday.

The rising and setting of the Sun for certain days in the month of May will be as follow:—

Sunday,	1st, Sun rises 37 m. past 4.	Sun sets 23 m. past 7	
Wednesday,	11th, - - - - 20 - - - - 4	- - - - 40 - - - - 7	
Saturday,	21st, - - - - 6 - - - - 4	- - - - 54 - - - - 7	

The Sun enters the sign Gemini at 36 m. past 6 in the afternoon of the 21st. Saturn is stationary on the 11th. Mars eclipses the star marked 132 ♉, passing nearly over the centre; and again, on the 27th, it eclipses ε ♊ 54′ north of the centre.

Equation of Time. [See January.] The following table will show what is to be subtracted from the apparent time as marked on the dial to obtain equal or true time for each fifth day during the month of May:—

			m.	s.
Sunday,	May 1,	from the time by the dial subtract	3	2
Friday,	6,		3	35
Wednesday,	11,		3	54
Monday,	16,		3	58
Saturday,	21,		3	48
Thursday,	26,		3	24
Tuesday,	31,		2	49

The Moon is full at 29 m. past 10 in the morning of the 4th: it enters its last quarter at 41 m. past 2 in the afternoon: the change, or new Moon, is at 23 m. past 4 on the 19th, and it enters its first quarter at 31 m. after 7 in the morning of the 26th. The time of the Moon's rising for the first 4 days after it is full is as follows:—

May 5th,	36 m. past 8	in the afternoon.	
6th,	42	9	ditto.
7th,	42	10	ditto.
8th,	42	11	ditto.

Venus will be at her greatest elongation on the 21st day of the month. Jupiter will be in the quadrature at ½ past 11 at night on the 22d, and the Georgian planet will be in opposition to the Sun, that is at the distance of six signs, or the two bodies will be in opposite parts of the heavens, at 6 in the morning of the 22d day of the month.

There will be only two eclipses of Jupiter's first satellite visible at Greenwich this month; namely, on the

7th day, at 10 minutes past 12 at night.
23d - - 28 - - - 10.

VIEW OF THE SOLAR SYSTEM.

Of the Earth.

The earth on which we live is, unquestionably, a primary planet belonging to the solar system, and which like Mercury and Venus already described, and Mars, Jupiter, Saturn, and the Georgian planets, the subjects of future notice, depends on the Sun for its light and motion.

In the darker ages of antiquity, this vast body, the abode of life and happiness to countless millions of creatures, was considered as a large circular plane spreading out indefinitely on all sides: and the surrounding heavens, in which the Sun, Moon, and stars, appear to move every 24 hours from east to west, were imagined to be at no great distance from it, and to have been created solely for the use and ornament of the inhabitants of the earth. It is now, and has for centuries, been completely ascertained that the earth is of a spherical figure, nearly resembling an artificial globe.

The several proofs of the sphericity of the earth are as follow: (1) Several celebrated navigators, as Magellan, Sir Francis Drake, Lord Anson, and Captain Cook, have actually sailed round it, by setting out, for instance, at Plymouth or other places, and by continually steering their course in one direction, viz. westward, have, at length, arrived at the place from which they had departed; which could never have happened, had the earth been of any other than a spherical form. (2) This form is also evident, from the circular appearance of the sea, and the circumstances which attend large objects, when seen at a distance on its surface. For, as has been observed a thousand times, when a ship goes out to sea, the people on the surrounding shore first lose sight of the hull, or body of the vessel, afterwards of the rigging, and at last they only discern the topmast, which circumstances can only be explained by supposing the convexity of the water between the eye and the object; for if it were not so, the image of the largest and most conspicuous part of the vessel would remain longest on the eye. (3) Another proof is taken from the shadow of the earth upon the face of the Moon, in the time of a lunar eclipse. For the Moon, like the earth, having no light but what it receives from the Sun, and the earth being, at this time, interposed exactly between them, the Moon

must either wholly or in part become obscure: and since in every eclipse of this kind, which is not total, the obscure part always appears to be bounded by a circular line, hence it is inferred the earth is spherical, it being certain that none but a spherical body can, in all situations, cast a circular shadow.

There are three principal motions belonging to the earth, viz. a motion of rotation about its axis, a motion in an orbit round the Sun, and a motion of its axis round the poles of the ecliptic. These three motions are derived from a single impulsion, supposed to be given to the earth at its origin, and combined with the perpetual action of the Sun. The rotation of the earth on its axis, called its diurnal motion, is the most uniform motion with which we are acquainted: it is performed in 23 h. 56 m. 4 sec.

The earth, or, to speak with more accuracy, the centre of gravity of the earth and Moon, describes an orbit round the Sun, which orbit is not of a circular but elliptic form, the Sun being in one of the foci. If we suppose the plane of this orbit extended to the fixed stars, it will then trace the path in the heavens called the ecliptic. The earth does not move round this orbit in a perpendicular position, but inclined to the ecliptic in an angle of 23° 28′. The points in the earth's orbit, which are intersected by this plane, are called the equinoctial points. The motion of the earth in its orbit is not uniform; it depends on its distance from the Sun: when it is nearest that body in winter, it moves the fastest, and it moves the slowest when it is farthest from the Sun in summer. It is, however, so far regular, that, with the exception of some trifling inequalities caused by the action of the Moon and planets, the *radius-vector*, as it is called, or line joining the centres of the earth and Sun, describes equal areas of the ellipse in equal times.

The third motion belonging to the earth is that which produces the precession of the equinoxes.—

The rotatory motion of the earth about its axis produces a protuberant form in the equatorial regions of the earth; and the continued action of the Sun and Moon on this surrounding mass, or annulus, produces a rotatory motion in the axis of the earth round the imaginary axis of the ecliptic, the inclination of these supposed axes remaining perpetually the same. On this subject, which is rather difficult of apprehension, we shall not enlarge in the present volume; only observing that the revolution here referred to will not be accomplished in less than 27,000 years.

The *diurnal* motion of the earth from west to east causes an apparent motion of the heavens from east to west. If the imaginary axis of the earth be prolonged each way till it intercepts the heavens, it will there form two points called the poles, round which the heavens appear to revolve. With us in the northern hemisphere, the north is the elevated pole, and the stars near it will describe small circles, increasing with their distance from the pole, till they arrive at a certain distance, when a portion of the circle will be intercepted by the horizon. It will be evident, by referring to an artificial celestial globe, that, as the polar distance of the stars increases, they will continue a longer time above the horizon; still, however, rising and setting north of the east and west points of the horizon, till they reach the equator. At this distance from the pole, they rise exactly in the east, and set exactly in the west; and at their greatest altitude, their distance from the zenith is observed to be equal to the elevation of the pole above the horizon. As the stars recede from the equator towards the south, they describe still smaller arcs, continue visible only for a few minutes, and no sooner appear on the meridian than they are carried down by the general motion of the heavens below the boundary of our sight. The Sun, Moon, and planets, appear to partake in a great measure of the diurnal motion of the heavens;

they describe nearly the same course as a fixed star would do in the same situation.

The change from night to day is caused by the diurnal motion of the earth on its axis; and the vicissitudes of the seasons, by the combinations of this motion with its annual revolution round the Sun. The annual motion of the earth round the Sun is performed in an orbit, the plane of which is inclined to the equator at an angle of 23° 28′, and the effect of this motion is to cause the apparent annual motion of the Sun. When the earth is in any point of its orbit, the apparent place of the Sun will be in the direction of the opposite point, and the apparent path of the Sun will be similar to that actually traced by the earth; and these two bodies will always be in opposite positions to each other. It was not till astronomy had arrived at a state of great perfection, that sufficient proofs could be collected to ascertain, with any degree of precision, which of these bodies were really in motion. The fact has, however, been long since demonstrated with as much certainty as any proposition in Euclid.

The difference of seasons and of climates on the earth, and the inequality in the length of the days and nights, all arise from this circumstance, that the plane of the earth's orbit is inclined to that of the equator. If a straight line be supposed always to connect the centres of the earth and Sun, this straight line or *radius-vector* will always trace the ecliptic in the heavens; and the point where it intercepts the surface of the earth will be that point over which the Sun is vertical. Now it will be evident, with a little consideration, that when the earth is in the upper or north part of its orbit, this line, supposed to pass through the centre of the Sun, will intercept some point to the south of the equator; and, on the contrary, when the earth is in the lower or southern part of its orbit, this line will intercept some point to the north of the equator: the circle bounding light and darkness being

always perpendicular to this line, the circles parallel to the equator will be unequally divided at different parts of the orbit.

The inequality in the distribution of the seasons, by which the inhabitants of the northern hemisphere of the globe enjoy a greater portion of the Sun by about eight days in the year, arises from a cause that shall now be illustrated.

The imaginary great circle in the heavens, called the *ecliptic*, is in truth the representation of the ellipse in which the earth travels round the Sun: all the irregularities, therefore, of the ellipse will, by observers, be transferred to the circle which represents it, and the four portions intercepted by the equinoctial and solstitial points, though represented each by an arc of 90°, will not be described in equal times, because they do not represent such portions of the ellipse as are originally so described. The point of the ecliptic, representing that point of the ellipse in which the Sun and earth are nearest to each other, is called the *perigee;* and the summer and winter months can never be equal, but in the singular instance of the coincidence of the perigee with one or other of the equinoctial points. The solar perigee has a progressive motion in the ecliptic, which it is found to complete in about 20,000 years; and it is a very remarkable circumstance, that this curious coincidence of the *perigee* with the *autumnal equinox* took place about the time when chronologists suppose the world to have been created, or about the year 4000 before the birth of Christ. At that time, each hemisphere enjoyed an equal portion of the Sun's light and heat, and since then the northern hemisphere had gradually the advantage, and the maximum of inequality took place in the year 1250. Since that time the advantage has gradually diminished, though it is very considerable. It will diminish till the year 6472, when the perigee, coinciding with the vernal equinox, will again equally divide the summer and winter periods between the

two hemispheres; after which, the southern inhabitants of the globe will enjoy the advantage of having the greatest share of the Sun for above 10,000 years. —We shall resume the subject of the earth in our next month's discussions.

The Naturalist's Diary.

Hail, bounteous MAY, that dost inspire
Mirth, and youth, and warm desire;
Woods and groves are of thy dressing,
Hill, and dale, doth boast thy blessing.

THIS month is usually considered as the most delightful of the whole year, and has long been the Muse's favourite theme; although much that is said of its beauties applies better to more southern climates, or, indeed, to our month of JUNE, which is, commonly, entitled to all the praises that the poets have lavished upon MAY. This month, however, is remarkable for the profusion of verdure which it exhibits: Nature's carpet is fresh laid, and nothing can be more grateful than to press its velvet surface:

When May is in his prime,
  Then may each heart rejoice;
When May bedecks each branch with green,
  Each bird strains forth his voice.

The lively sap creeps up
  Into the blooming thorn;
The flowers which cold in prison kept,
  Now laugh the frost to scorn.

All Nature's *imps*[1] triumphs
  Whiles joyful May doth last;
When May is gone, of all the year
  The pleasant time is past[2].

The scenery of a May morning is, not unfrequently, as beautiful as can possibly be conceived; a serene

[1] Sons. [2] Paradise of Dainty Devices, Ed. 1576.

sky, a pure air, a refreshing fragrance arising from the face of the earth, and the melody of the feathered tribes, all combine to render it inexpressibly delightful, to exhilarate the spirits, and to call forth a song of grateful adoration.

The latest species of the summer birds of passage arrive about the beginning of this month. (1) The *goatsucker*, or fern-owl (*caprimulgus Europæus*), makes its appearance only in the dusk of the evening, to search for prey, and, while perched on a tree, utters a dull jarring noise[1]. It feeds on insects, and is a great destroyer of the cock-chaffer or dor-beetle. This bird is found in every part of the old Continent, from Siberia to Greece, Africa, and India; it leaves England about the end of August. (2) The spotted *fly-catcher* (*musicapa grisola*) is the most mute and familiar of all our summer birds; it builds in a vine or sweet briar, against the wall of a house, or on the end of a beam, and sometimes close to the post of a door, where people are going in and out all day long: it returns to the same place year after year[2]. The *sedge-bird* (*motacilla salicaria*) is found in places where reeds and sedges grow, and builds its nest there, which is made of dried grass, tender fibres of plants, and lined with hair. It sings incessantly, night and day, during the breeding time, and imitates, by turns, the notes of the sparrow, the skylark, and other birds, from which it is called the English *mock-bird*.

The arduous time of incubation is now come, and birds are sedulously employed in hatching and rearing their young:

> Each secret nook, each silent shade
> Of mazy grove, of tangled bush, or copse,
> So seldom trod, is rendered sacred now
> To brooding patience and maternal care.

---

[1] Thence termed the *night-jar* by Mr. Bewick.

[2] The pied fly-catcher (*muscicapa atricapilla*) is nowhere common, but is most plentiful in Yorkshire, Lancashire, and Derbyshire.

The insect tribes continue to add to their numbers; among these may be named several kinds of moths and butterflies (*papilio atalanta, cardamines, ægeria,* &c.[1]), field-crickets (*gryllus campestris*), the chaffer or may-bug (*scarabæus melolontha*), and the forest-fly (*hippobosca equina*), which so much annoys horses and cattle. The female wasp (*vespa vulgaris*) appears at the latter end of the month. About this time bees send forth their early swarms; and the female glow-worm (*lampyris noctiluca*) is seen on dry banks, about woods, pastures, and hedgeways, exhibiting, as soon as the dusk of the evening commences, the most vivid and beautiful phosphoric splendour, in form of a round spot of considerable size. The male is smaller than the female, and is provided both with wings and wing-sheaths: it is but rarely seen; and it seems, even at present, not very clearly determined whether it be luminous or not. The splendour exhibited by the female in this species, is probably ordained for the purpose of attracting the male:

> The chilling night-dews fall; away, retire;
> For see, the glow-worm lights her am'rous fire!
> Thus, ere night's veil had half obscured the sky,
> Th' impatient damsel hung her lamp on high:
> True to the signal, by love's meteor led,
> Leander hastened to his Hero's bed. WHITE.

[1] In again naming the butterfly, we cannot forbear to copy some exquisite stanzas of an anonymous poet:—

> When, bursting forth to life and light,
> The offspring of enraptured *May*,
> The butterfly, on pinions bright,
> Launched in full splendour on the day;
>
> Unconscious of a mother's care,
> No infant wretchedness it knew;
> But, as she felt the vernal air,
> At once to full perfection grew.
>
> Her slender form, ethereal, light,
> Her velvet-textured wings unfold,
> With all the rainbow's colours bright,
> And dropt with spots of burnished gold.

About the commencement of the month the flowers of the lily of the valley (*convallaria maialis*) and the chesnut tree (*fagus castanea*) begin to open; the tulip tree (*liriodendron tulipifera*) hath its leaves quite out, and the flowers of the oak (*quercus robur*), the Scotch fir (*pinus sylvestris*), the honeysuckle, and the beech, are in full bloom. Towards the middle, the flowers of the white thorn are quite out, and the mulberry tree (*morus nigra*) puts forth its leaves; the walnut (*juglans regia*) hath its flowers in full bloom; the flowers of the garden rose also begin to open. The lilac (*syringa vulgaris*), the barberry (*berberis vulgaris*), and the maple (*acer campestre*), are also in flower. At the latter end of the month, rye (*secale hybernum*) is in ear; the mountain ash (*sorbus aucuparia*), laburnum (*cytisus laburnum*), the guelder rose (*viburnum opulus*), clover (*trifolium pratense*), columbines (*aquilegia vulgaris*), the alder (*rhamnus frangula*), and the wild chervil (*chærophyllium temulum*), have their flowers full blown.

The germander (*veronica chamædrys*) is seen in hedges, and various species of meadow-grass are now in flower. Hearts-ease (*viola tricolor*) in corn-fields; the butter-cup (*ranunculus bulbosus*[1]) spread over the meadows; the cole-seed (*brassica napus*) in cornfields, bryony (*brionia dioica*), and the arum or cuckoo-pint, in hedges, now show their flowers.

In this and in the succeeding month, nothing so much attracts our attention as the order of succes-

Trembling awhile, with joy she stood,
And felt the Sun's enliv'ning ray,
Drank from the skies the vital flood,
And wondered at her plumage gay:
And balanced oft her broidered wings,
Thro' fields of air prepared to sail;
Then on her vent'rous journey springs,
And floats along the rising gale.

[1] These flowers do not tinge the butter, as erroneously supposed, with its rich yellow colour, at this season; for the cows will not touch them.

sion, and infinite variety of flowers. Some admirable reflections upon this subject we subjoin, in the language of an interesting and eloquent writer on Natural History[1]: 'The attentive observer will perceive that every plant upon earth appears in its appointed order. The God of Seasons, the God of Beauty and Excellence, hath exactly determined the time when *this* flower shall unfold its leaves, *that* spread its glowing beauties to the Sun, and a *third* hang down its drooping head, and, withered, "resign its sunny robes." A few weeks ago we first saw the *snow-drop* rise in lowly clusters from the ground. Long before the trees venture to unfold their leaves, and while Winter yet ventures to maintain his dreary reign, it displays its milk-white flow'rets to the eye:

> First leader of the flowery race aspires,
> And foremost catches the Sun's genial fires,
> Mid frosts and snows triumphant dares appear,
> Mingles the seasons, and leads on the year.
>
> TICKELL.

'Next appears the *crocus*, too timid yet to resist the impetuosity of the winds. With this comes the fragrant *violet*, the expressive emblem of that retiring goodness, which, with unostentatious hand, contributes silently to the happiness of all around. The *polyanthus*, too, with countless colours, and the *auricula*, inestimable for the exquisite richness of its powdered tints, demand the skilful culture of the florist. These, with many others which grow in foreign countries, upon the mountains, may be called, without impropriety, the vanguard of the flowery host.

'These beauteous children of Nature do not appear all at once, but in the most enchanting regularity of succession. Each month displays the beauties peculiar to itself. Soon succeeds the *tulip*, the transient glory of the garden; the *anemone*, encircled at the bottom with a spreading robe, and rounded, at the

[1] The Contemplative Philosopher.

top, into a beautiful dome; and the *ranunculus*, which displays all the magnificence of foliage, and charms the eye with such a brilliant assemblage of colours. Nor lingers behind the *rose*, the favourite flower of poets, which glows with its own vivid tints, and diffuses around its aromatic sweets; while the *carnation*, as if centering in itself the perfection of every flower, attracts the wanderer by that lustre and variety of hues, and that fragrancy of scent, which entitle it to a kind of pre-eminence over the most beautiful of the painted tribes. But, not to proceed with the later flowers of the year, I will conclude my observations on this head with Thomson's picturesque recapitulation :—

At once arrayed
In all the colours of the flushing year,
By nature's swift and secret-working hand,
The garden glows, and fills the liberal air
With lavish fragance.

* * * * *

Along these blushing borders, bright with dew,
And in yon mingled wilderness of flowers,
Fair-handed Spring unbosoms every grace;
Throws out the snowdrop and the crocus first;
The daisy, primrose, violet darkly blue,
And polyanthus of unnumbered dyes;
The yellow wall-flower, stained with iron-brown;
And lavish stock that scents the garden round;
From the soft wing of vernal breezes shed,
Anemonies; auriculas, enriched
With shining meal o'er all their velvet leaves;
And full ranunculus of glowing red.
Then comes the tulip race, where Beauty plays
Her idle freaks; from family diffused
To family, as flies the father-dust,
The varied colours run; and, while they *break*
On the charmed eye, th' exulting florist marks,
With secret pride, the wonders of his hand.
No gradual bloom is wanting; from the bud,
First-born of Spring, to Summer's musky tribes:
Nor hyacinth, of purest virgin white,
Low bent, and blushing inward; nor jonquil's
Oft potent fragrance; nor Narcissus fair,
As o'er the fabled fountain hanging still;
Nor broad carnations, nor gay-spotted pinks;

Nor, showered from every bush, the damask-rose.
Infinite varieties, delicacies, smells,
With hues on hues expression cannot paint,
The breath of Nature, and her endless bloom.'

'What an inexhaustible source of grateful admiration does this regular succession of flowers present! What manifest displays of Divine Wisdom and ever active Goodness! Were all the flowers of the different seasons to bloom together in one gay assemblage, we should sometimes be overpowered with profusion, and at other times lament a total privation. Scarce should we be able to discern one half of their innumerable beauties, when the eye, with unspeakable regret, would witness their decay. But while its proper time and place is allotted to every kind of flower, this delightful succession enables us to contemplate them with greater convenience and exactness. We can often repeat the pleasing examination, enjoy all their beauties at our leisure, and form a more intimate acquaintance with them. This wise arrangement of Providence affords us another inestimable advantage. We not only view the various kinds of flowers as they flourish in the most beautiful perfection, but we become less sensible, on this account, of their transient duration. The early flowers flourish awhile, and wither; but a variety of new kinds is constantly springing up, to prolong the beauty of the garden, and, as it were, to perpetuate our pleasure.

'The infinite variety of flowers is not less a subject of admiration than their regular succession, and equally evinces consummate wisdom and design.—Had there been an exact uniformity in the structure, form, and colour, the fragrancy and other properties of flowers, that uniformity would have become fatiguing, and we should soon have languished for the charms of novelty. Or, if the snmmer were to be productive of no other flowers than what adorn the spring, we should not only become weary of contemplating them, but neglect to bestow upon them

the necessary care of cultivation. The Divine Goodness is indeed apparent, in having diversified the productions of the vegetable kingdom in such a delightful manner, as to add to their perfections the charms of a variety ever pleasing and ever new. This diversity is not discernible only in the different families of flowers, but it is to be seen, moreover, in the individuals. While the carnation is different from the tulip, and the tulip from the auricula, each carnation, each tulip, and each auricula, has its peculiar character, with its particular beauties and varieties. In each there is something original. In a bed of tulips or carnations, there is scarce a flower in which some difference may not be observed in its structure, size, or assemblage of colours; nor can any two flowers be found in which the shape and shades are exactly similar.

'Some flowers rear their lofty heads, as if in proud pre-eminence over others, that rise to a moderate height, or keep their humble station near the ground. Some glow with the most gaudy colours, while others charm the eye with their elegant simplicity. With what masterly skill are the varying tints disposed; magnificently bold in some; in others delicately faint; laid on in *these* with a kind of negligence, and adjusted in *those* by the nicest touches of art! Some perfume the air with the most exquisite odours; while others are content to delight the eye, without gratifying the sense of smell. In fine, we behold that successive beauty, that pleasing variety, and that endearing novelty in flowers, in comparison of which all the works of art must appear insipid and disgusting.'

The *marine* plants which flower this month, and which are chiefly found on sea-shores and in the crevices of rocks, are, buck's horn (*plantago coronopus*[1]), burnet saxifrage (*pimpinella dioica*), sea arrow-grass (*triglochin. maritimum*) on muddy shores; the

[1] Flowers the whole summer.

clammy lychnis (*lychnis viscaria*), the cerastium tetrandrum; scurvy grass (*cochlearia*), sea kale (*crambe maritima*) on sandy shores; the sea-cabbage (*brassica oleracea*), the sea stork's bill (*erodium maritimum*), the slender bird's foot trefoil (*lotus diffusus*), the mountain flea-wort (*cineraria integrifolia*) on chalky cliffs; and the sedge (*carex arenaria*) on sea-shores.

The leafing of trees, which is, usually, completed in May, takes place in the following order: (1) The willow, poplar, alder, and other aquatics; (2) The lime, sycamore, and horse-chesnut; (3) The oak, beech, ash, walnut, and mulberry; but the whole of the third number are not in full leaf till next month[1]. Cattle are usually sent to the pastures on old May day; and the juices of the young springing grass contribute to render the milk of the cows more abundant and of a finer quality. The *dairy* now occupies attention:

> Slow rolls the churn, its load of clogging cream
> At once foregoes its quality and name;
> From knotty particles first floating wide,
> Congealing butter's dashed from side to side;
> Streams of new milk through flowing coolers stray,
> And snow-white curd abounds and wholesome whey.

This is the season in which cheese is made; the counties most celebrated for this article are Cheshire, Wiltshire, and Gloucestershire.

The corn is benefited by a cold and windy May, as it is too apt to run into stalk, if the progress of vegetation be much accelerated by warm weather at this season. In late years, some sowing remains to be done; and in forward ones, the weeds should be well kept under.

[1] Mr. Stillingfleet in his Tracts (p. 142) gives the following as the order of the leafing of trees and shrubs, as observed by him in Norfolk; *January* 15, Honeysuckle. *March* 11, gooseberry, currant, elder. *April* 1, birch, weeping-willow; 3, raspberry, bramble; 4, briar; 6, plum, apricot, peach; 7, filberd, sallow, alder; 9, sycamore; 10, elm, quince; 11, marsh elder; 12; wych elm; 13, quicken tree, hornbeam; 14, apple tree; 16, abele, chesnut; 17, willow; 18, oak, lime; 19, maple; 21, walnut, plane, black poplar, beech, acacia robinia; 23, ash, carolina poplar.

June.

THIS month is clothed by *Peacham* (p. 419) 'in a mantle of dark grasse green, upon his head a garland of bents, king-cups, and maidens' hair; in his left hand an angle [eagle?]; in his right, the sign *Cancer;* upon his arm, a basket of the fruits of his season.' The Saxons called June '*weyd-monat*, because their beasts did then *weyd* in the meddowes, that is to say, goe to feed there, and hereof a meddow is also in the *Teutonicke* called a *weyd;* and of *weyd* we yet retaine our word *wade*, which we understand of going thorow watry places, such as meddowes are wont to be.' (*Verstegan*, p. 61.)

O JUNE! prime season of the annual round,
Thy gifts with rich variety abound:
Though hot thy suns—they luscious fruits mature;
Though loud thy thunders—coolness they procure;
Pleasing thy twilight to the studious muse,
Thy evening coolness, and thy morning dews.

Remarkable Days.

1.—NICOMEDE.

NICOMEDE was a pupil of St. Peter, and was discovered to be a Christian by his burying Felicula, a martyr, in a very honourable manner. He was beaten to death with leaden plummets, on account of his religion, in the reign of Domitian.

4.—KING GEORGE III BORN.

5.—TRINITY SUNDAY.

Stephen, Bishop of Liege, first drew up an office in commemoration of the Holy Trinity, about the year 920; but the festival was not formally admitted into the Romish church till the fourteenth century, under the *pontificate* of John XXII.

Among the churchwardens' accounts for *Lambeth*, are the following curious items:

	l.	*s.*	*d.*
1519. Item, for garlonds and drynk for the chylderne on Trenyte Even - - - - - - - - - -	0	0	vi
——To Spryngwell and Smyth for syngyng with the Procession on Trenete Sonday Even	0	0	xii
——Item, for four onssys of garnesyng rebonds, at ix*d* the onse - - - - - - - - - -	0	iii	0

5.—SAINT BONIFACE.

Boniface was a Saxon presbyter, born in England, and at first called Winfrid. He was sent as a missionary by Pope Gregory II into Germany, where he made so many converts, that he was distinguished by the title of the *German Apostle*. He was created Bishop of Mentz in the year 145. Boniface was one of the first priests of his day, and was also a great friend and admirer of the Venerable Bede. He was murdered in a barbarous manner by the populace near Utrecht, while preaching the Christian religion.

9.—CORPUS CHRISTI.

This festival, 'the body of Christ,' was ap-

pointed in honour of the Eucharist; and always falls on the Thursday after Trinity Sunday. In Roman Catholic countries, this day is celebrated with music and lights; flowers are strewed along the streets, and the richest tapestry is hung upon the walls. In some parts of Wales, the inhabitants strew green herbs and flowers before their doors on Corpus Christi Eve.

11.—SAINT BARNABAS.

Our saint's proper name was *Joses*; he was descended of the tribe of Levi, and born at Cyprus. His parents being rich, had him educated at Jerusalem, under the care of Gamaliel, a learned Jew; and, after his conversion, he preached the Gospel with Paul, in various countries, for fourteen years. Barnabas suffered martyrdom at Salamis, in his native island;—being shut up all night in the synagogue by some Jews, he was, the next morning, cruelly tortured, and afterwards stoned to death. The *Epistle* which he wrote is considered genuine, though not admitted into the canon of the church. In the abbey churchyard at Glastonbury, there was formerly a miraculous walnut-tree, which never budded till St. Barnabas's day; this curiosity was much sought after by Queen Anne, King James, and many of the nobility. A walnut-tree of the common sort now occupies its place.

17.—SAINT ALBAN.

St. Alban, the first Christian martyr in this island, suffered in 303. He was converted to Christianity by Amphialus, a priest of Caerleon in Monmouthshire, who, flying from persecution, was hospitably entertained by St. Alban, at Verulam, in Hertfordshire, now called, from him, St. Albans. Amphialus being closely pursued, made his escape, dressed in St. Alban's clothes. This, however, being soon discovered, exposed St. Alban to the fury of the Pagans; and our saint refusing to perform the sacri-

fice to their gods, was first miserably tortured, and then put to death.

20.—TRANSLATION OF EDWARD, *King of the West Saxons.*

Edward, being barbarously murdered by his mother-in-law, was first buried at Warham, without any solemnity; but, after three years, was carried by Duke Alferus to the minster of Shrewsbury, and there interred with great pomp.

21.—LONGEST DAY.

This day is, in London, 16 h. 34 m. 5s., allowing 9 m. 16 s. for refraction.

24.—SAINT JOHN THE BAPTIST, *and* MIDSUMMER DAY.

The nativity of Saint John the Baptist is celebrated by the Christian church on this day, because he was the *Forerunner* of our blessed Lord, and, by preaching the doctrine of repentance, prepared the way for the Gospel. His birth was foretold by an angel; and his peculiar office of *Harbinger of Christ* was predicted by the *prophets*. He passed an ascetic life, and, until the time of his preaching, retired into a wilderness, subsisting upon locusts and wild honey: his apparel was suitable to his hermitical life, being only a rough garment of camel's hair, tied with a leathern girdle. He was imprisoned by Herod for preaching against his marriage with his brother's wife, and was afterwards beheaded by the arts of that enraged woman. This festival is first noticed by Maximus Tauricensis, who lived about the year 400.

On the eve of St. John the Baptist, commonly called Midsummer Eve (observes Mr. Bourne), it is usual in most country places, and also here and there in *towns and cities*, for both old and young to meet together, and be merry over a large fire, which is made in the open street. Over this they frequently leap and play at various games, such as running, wrestling,

dancing, &c. But this is generally the exercise of the younger sort; as the older ones, for the most part, sit by as spectators, and enjoy themselves and their bottle. And thus they spend the time till midnight, and sometimes till *cock-crow*.

Stow, in his Survey of London, tells us, 'that on the Vigil of St. John Baptist every man's door being shadowed with green birch, long fennel, St. John's wort, orpin, white lilies, and such like, garnished upon with garlands of beautiful flowers, had also lamps of glass, with oil burning in them all the night: some hung out branches of iron, curiously wrought, containing hundreds of lamps lighted at once.' He mentions also the *bone-fires* in the streets, every man bestowing wood or labour towards them.

Some Midsummer-eve rites are thus noticed by Gay, in his *Fourth Pastoral:*

At eve last Midsummer no sleep I sought,
But to the field a bag of *hemp-seed* brought;
I scattered round the seed on every side,
And three times, in a trembling accent, cried;—
'This *hemp-seed* with my virgin hand I sow,
Who shall my true love be, the crop shall mow.'
I straight looked back, and, if my eyes speak truth,
With his keen scythe behind me came the youth.

In the Connoisseur, No. 56, other curious ceremonies are noticed. 'I and my two sisters tried the dumb-cake together: you must know, two must make it, two bake it, two break it, and the third put it under each of their pillows, (but you must not speak a word all the time,) and then you will dream of the man you are to have. This we did: and to be sure I did nothing all night but dream of Mr. Blossom. I likewise stuck up two Midsummer Men, one for myself and one for him. Now, if his had died away, we should never have come together, but I assure you his blowed and turned to mine. Our maid Betty tells me, that if I go backwards, without speaking a word, into the garden upon Midsummer

Eve, and gather a rose, and keep it in a clean sheet of paper, without looking at it, till Christmas Day, it will be as fresh as in June; and if I then stick it in my bosom, he that is to be my husband will come and take it out.' Grose observes, 'any unmarried women fasting on Midsummer Eve, and at midnight laying a clean cloth, with bread, cheese, and ale, and sitting down as if going to eat, the street-door being left open, the person whom she is afterwards to marry will come into the room and drink to her by bowing; and after filling the glass will leave it on the table, and, making another bow, retire.'

The subsequent extract from the antient Calendar of the Romish church, will show the ceremonies observed at Rome on the eve and day of St. John the Baptist:—

'23. The Vigil of the Nativity of John the Baptist.
Spices are given at vespers.
Fires are lighted up.
A girl with a little drum that proclaims the garland.
Boys are dressed in girls' clothes.
Carols to the liberal; Imprecations against the avaritious.
Waters are swum in during the night, and are brought in vessels that hang for the purposes of divination.
Fern in great estimation with the vulgar, on account of its seed.
Herbs of different kinds are sought, with many ceremonies.
Girls' Thistle is gathered, and an hundred crosses by the same.
'24. The Nativity of John the Baptist. Dew and new Leaves in estimation.
The Vulgar Solstice.'

According to Grose, any person fasting on Midsummer Eve, and sitting in the church porch, will, at midnight, see the spirits of the persons of that parish who will die that year, come and knock at the church door, in the order and succession in which they will die. One of these watchers (there being several in company) fell into a sound sleep, so that he could not be waked. While in this state, his ghost, or spirit, was seen by the rest of his com-

panions knocking at the church door. This circumstance is noticed in the elegant poem of the 'Cottage Girl:'

Now to relieve her growing fear,
That feels the haunted moment near
When ghosts in chains the churchyard walk,
She tries to steal the time by talk.
But hark! the church clock swings around,
With a dead pause, each sullen sound,
And tells the midnight hour is come,
That wraps the groves in spectred gloom!

On the subject of gathering the Rose on Midsummer Eve, we have also the following lines:

The Moss-rose that, at fall of dew,
(Ere Eve its duskier curtain drew)
Was freshly gathered from its stem,
She values as the ruby gem;
And, guarded from the piercing air,
With all an anxious lover's care
She bids it, for her shepherd's sake,
Await the new-year's frolic wake—
When faded, in its altered hue
She reads—the rustic is untrue!
But, if it leaves the crimson paint,
Her sick'ning hopes no longer faint;
The Rose upon her bosom worn,
She meets him at the peep of morn.

With these on the sowing of hemp:

To issue from beneath the thatch,
With trembling hand she lifts the latch,
And steps, as creaks the feeble door,
With cautious feet the threshold o'er;
Lest, stumbling on the horseshoe dim,
Dire spells unsinew ev'ry limb.

Lo! shudd'ring at the solemn deed,
She scatters round the magic seed,
And *thrice repeats*, 'The seed I sow,
My true-love's scythe the crop shall mow.'
Straight, as her frame fresh horrors freeze,
Her true-love with his scythe she sees.

And next, she seeks the yew-tree shade,
Where he who died for love is laid;
There binds, upon the verdant sod
By many a moonlight fairy trod,

The cowslip and the lily-wreath
She wove her hawthorn hedge beneath:
And whisp'ring, 'Ah! may Colin prove
As constant as thou wast to love!'
Kisses, with pale lip full of dread,
The turf that hides his clay-cold head!

29.—SAINT PETER.

Peter's original name, Simon, was not abolished by Christ, but that of *Cephas* was added to it, which, in Syriac, the vulgar language of the Jews, signifies a stone, or rock; hence the Greek Πέτρος, and our *Peter*. The apostle's father was Jonah, probably a fisherman of Bethsaida. His brother Andrew, being first converted, was said to be an instrument of Peter's conversion, *John* i, 40, 41.

Some writers assert that *Nero*, being attached to the practices of the magicians, and resenting Peter's opposition to them, was not only the cause of his imprisonment, but also of his martyrdom, which was put into execution in the following manner: Peter was first scourged, and then led out to be crucified upon the hill called *Janiculus*, desiring to be fastened to the cross with his *head downwards*, alleging that he thought himself unworthy to die in the same way as his Lord and Master.

Astronomical Occurrences.

Of the Diurnal Motion of the Heavens, and of the fixed Stars.

If in a fine night, says M. La Place, and in a place where the horizon is uninterrupted, we follow with attention the appearance of the heavens, it will be seen to vary at every instant. Some stars are rising above, others setting below the horizon; some begin to appear in the west, others to disappear towards the west; several, as the pole star and the stars of the Great Bear, never reach the horizon. In these various motions their respective positions to each other remain unchanged, and they describe circles so much the less as they are nearer a point which appears to be immoveable. Thus the heavens seem

to revolve round two fixed points, called, from this circumstance, the poles of the world, and in this motion is included the whole system of stars. The pole elevated above our horizon, is the north pole; the opposite pole, which we imagine beneath the horizon, is the south pole. Several interesting questions present themselves to be resolved: What becomes of those stars during the day, which we have beheld in the preceding night; and from thence do those come which begin to appear? Where are those gone which have departed from our view? An attentive examination of these phenomena will afford a simple answer to these questions. In the morning the brightness of the stars grows fainter, as the dawning-light increases; in the evening they become more brilliant as the twilight diminishes; it is not therefore because they cease to shine, but because they are effaced by the more vivid light of the Sun, that we are unable to see them. The discovery of the telescope has enabled us to verify this explanation, by showing us the stars, even when the Sun is at its greatest elevation above the horizon: those which are near enough the pole never to reach the horizon, appear constantly above it.

It becomes also an inquiry as to the number of fixed stars that we can at any one time see with the naked eye. To a common observer in a very bright night, and in the absence of the Moon, there appears to be an immense number, very many thousands; but astronomers contend that, without the assistance of glasses, we cannot at one time see so many as a thousand, and that the deception is occasioned by the numberless reflections and refractions to which the light, in its passage from those stars, is subject. The heavens, however, examined by telescopes, present us with innumerable stars; the better the glasses, the greater the number that are ascertained to exist. Dr. Herschel, in a paper on the Construction of the Heavens, says it is probable that the great stratum,

called the milky way, consists of an indefinite number of stars of various magnitudes, and at different distances; and that our Sun is actually one of the heavenly bodies belonging to it. 'We will,' says the doctor, 'retreat to our own retired station in one of the planets attending a star in the great combination with numberless others; and in order to investigate what will be the appearances from this contracted situation, let us begin with the naked eye.—The stars of the first magnitude, being in all probability the nearest, will furnish us with a step to begin our scale; setting off, therefore, with the distance of Sirius or Arcturus, for instance, as unity, we will suppose that those of the second magnitude are at double, and those of the third at treble the distance, and so on. Taking it then for granted, that a star of the seventh magnitude is about seven times as far from us as one of the first, it follows that an observer, who is enclosed in a globular cluster of stars, and not far from the centre, will never be able, with the naked eye, to see to the end of it: for since, according to the above estimations, he can only extend his view about seven times the distance of Sirius, it cannot be expected that his eyes should reach the borders of a cluster which has, perhaps, not less than fifty stars in depth, every where around him. The whole universe, therefore, to him, will be comprised in a set of constellations richly ornamented with scattered stars of all sizes. Or if the united brightness of a neighbouring cluster of stars should, in a remarkably clear night, reach his sight, it will put on the appearance of a small, faint, nebulous cloud, not to be perceived without the greatest attention. Allowing him the use of a common telescope, he begins to suspect that all the milkiness of the bright path which surrounds the sphere, may be owing to stars. By increasing his power of vision, he becomes certain that the milky way is indeed no other than a collection of very small stars, and the nebulæ nothing but clusters of stars.'

Dr. Herschel then solves a general problem for computing the length of the visual ray; that of the telescope which he uses will reach stars 497 times the distance of Sirius. Now Sirius cannot be nearer than a hundred thousand times the length of the earth's orbit; therefore Dr. Herschel's telescope will at least reach 100,000 × 190,000,000 × 497 miles; and he says, that, in the most crowded part of the milky way, he has had fields of view that contained no less than 588 stars, and these were continued for many minutes, so that, in a quarter of an hour, he has seen 116,000 stars pass through the field of view of a telescope of only 15′ aperture: and at another time, in 41 minutes, he saw 258,000 stars pass through the field of his telescope. Every improvement in his telescopes has discovered stars not seen before; so that there appears no bounds to their number, nor to the extent of the universe.

In this month, the Sun rises to its highest part of the heavens on the 22d, but to casual observers its apparent meridian height will be the same for several days before and after the 22d. The times of the Sun's rising and setting will be as follow:

Wednesday	1st, Sun rises	53 m. after 3.	Sun sets	7 m. after 8
Saturday	11th	46	3	14	8
Wednesday	22d	43	3	17	8

The Sun will enter Cancer at 10 minutes after 3 in the morning on the 22d. On the 1st, Venus will pass over the star marked o ♓, the star being 38′ north of the planet's centre: and on the 16th, Jupiter will eclipse the star ρ ♌, the star being one degree south of the planet's centre.

Equation of Time. [See Explanation in January.] The following table will show what is to be subtracted from, and added to the apparent time, as exhibited by the dial, in order to set the clock or watch to equal or true time, for each 5th day of the month.

		m. s.
Wednesday 1st, from the time shown by the dial	SUBTRACT	2 40
Monday, 6th,		1 53
Saturday, 11th,		0 56
Thursday, 16th,	ADD	0 6
Tuesday, 21st,		1 11
Sunday, 26th,		2 15

The full Moon occurs at 15 minutes past 1 in the morning of the 3d day: it enters its last quarter at 27 minutes past 4 in the morning of the 11th. The change or new Moon is 32 minutes past 11 at night on the 17th, and it will enter its first quarter at 33 minutes past 4 in the afternoon of the 24th. The time of the Moon's rising on the first four days after she is full will be as follows, viz.

June 4th, 30 min. past 9 in the evening.
5th, 21 - - - - 10 - - - ditto.
6th, 3 - - - - 11 - - - ditto.
7th, 39 - - - - 11 - - - ditto.

The superior conjunction of Mercury will be at 12 at noon on the 6th of June. There will be but one eclipse of Jupiter's first satellite visible, of which the emersion will take place at 40 minutes past 10 in the evening of the 15th. On the 17th, at 50 minutes past 10 o'clock at night, there will be an eclipse of the second satellite. This will be the time of the emersion also; therefore, to see this and the other eclipse, the observer must be at his stand a proper time previously.

VIEW OF THE SOLAR SYSTEM.

Of the Earth.

Although we have spoken of the motions of the earth as certain, yet it may be worth while to enter a little more at large on the subject. 'The motion of the earth,' says a good writer, 'has so long ceased to be a disputed question, that the arguments on each side are nearly forgotten; and those who do not scruple to adopt the hypothesis of the earth's mo-

tions, are often less acquainted with the arguments on which it is supported, than they would have been in former times, when their opinions must have been the subjects of fierce contention.' Of the modern writers on this topic, La Place seems to have collected these arguments together in the most popular and perspicuous form. Of these we shall give a cursory account. When we reflect on the diurnal motion to which all the heavenly bodies are subject, we recognize the existence of a general cause which moves them, or which seems to move them, round the axis of the earth. If we consider that these bodies are insulated, with respect to each other, and placed at very different distances from the earth; that the Sun and the stars are at a much greater distance from it than the Moon; and that the variations in the apparent diameters of the planets indicate great alterations in their distances; and, moreover, that the comets traverse the heavens freely, and in almost all directions, it will be difficult to conceive that it is the same cause which impresses on all these bodies a common motion of rotation. But since the heavenly bodies present the same appearances to us, whether the firmament carries them round the earth, considered as immoveable, or whether the earth itself revolves in a contrary direction, it seems much more natural to admit this latter motion, and to regard that of the heavens as only apparent.

The earth is a globe, not 8000 miles in diameter; but the diameter of the Sun is nearly 100 times larger. If its centre coincided with that of the earth, its volume would not only embrace the orbit of the Moon, but extend much more than as far again; from hence we may judge of its immense magnitude: besides, its distance from the earth is 95,000,000 of miles. Is it not, then, more natural to attribute to the globe that we inhabit a rotatory motion on its own axis, than to suppose in a mass so enormous, and so remote from us as the Sun is, such an extremely rapid mo-

tion as would be requisite to revolve in one day round the earth? Let us consider, also, what an immense power it would require to contain it, and to counteract its centrifugal force; that is, to retain it in its orbit. Every one of the stars presents to us similar difficulties, which are all removed by admitting the revolution of the earth on its supposed axis.

We have already observed, that the pole of the equator seems to move slowly round that of the ecliptic, from whence results the precession of the equinoxes. If the earth is immoveable, the pole of the equator is equally so, since it always corresponds to the same point of the terrestrial surface: the ecliptic, therefore, moves round these poles, and in this motion carries all the heavenly bodies with it. Thus, the whole system, composed of so many heavenly bodies, differing from each other in their magnitudes, motions, and distances, would be again subject to a general motion, which disappears, and is reduced to a very simple law, if we suppose the terrestrial axis to move round the poles of the ecliptic.

According to the true theory, we are but in a similar situation, on a large scale, of a spectator placed in a ship that is in motion: we are carried on, it is true, with an immense velocity; which velocity is, however, common to every thing that surrounds us. The person on ship-board fancies himself at rest, and, the shore, the hills, and all the objects placed out of the vessel, appear to him to move. But on comparing the extent of the shore, and the heights, perhaps, of surrounding hills or mountains, he begins to suspect that the apparent motion of these objects arises from the real motion of himself. The stars which fill, as it were, the celestial regions, are, relatively to the earth, what the shores and hills are to the vessel; and the same reasons which convince the navigator of the reality of his own motion, prove, or ought to prove, to us the motion of the earth. It may be further observed, that in all the works of nature with

which we are acquainted, the Creator appears to act by the shortest, easiest, and simplest means. Now if the earth be at rest, and the stars to move, the velocity of these latter must be immense; and yet all the purposes thereof might have been answered by a moderate motion of the earth alone.

The Moon's distance from the earth is 240,000 miles; of course, the length of the tract which it traverses, if it moves round the earth in 24 hours, is about 1,500,000; that is, at the rate of 62,500 miles in an hour, instead of 2290 miles, which is really the case; consequently, in each second of time, the Moon, known to be the slowest of all the heavenly bodies, must move more than 17 miles. Again, the Sun's mean distance from the earth is about 95,000,000 miles; consequently the diurnal path of that luminary, if it revolve about our globe in 24 hours, must be 580,000,000; and, therefore, in a single second, the beat of a watch, he must move nearly 7,000 miles.

Upon the same principle, that is, supposing the earth to be the centre of the system, and not the Sun, the planet Mars, in a second of time, must travel at the rate of more than 10,000 miles, Jupiter 36,000, and Saturn 62,000. And, lastly, the fixed stars being yet indefinitely more remote from the earth than the Sun or Saturn, their motion in or near the equator must be vastly swifter than this.

These arguments, and our author mentions many others, which are equally conclusive to the mathematician, though not so obvious to the general reader, are strengthened by analogy. A rotatory motion has been observed in several planets, and always from west to east, which is similar to that which the diurnal motion of the heavens seems to indicate in the earth. Jupiter, which is above a thousand times larger than the earth, moves, unquestionably, on its axis in less than 12 hours. An observer, on its surface, would see the heavens revolve round him in that time; yet we, as mere observers, know, in the case

of Jupiter, that the motion of the heavens to that planet would be apparent, and not real. Is it not therefore reasonable to think, that it is the same with that which we observe on the earth? What confirms this analogy is, that both the earth and Jupiter are flattened at the poles, which is no doubt occasioned by their rotatory motions about imaginary axes. This circumstance should, in theory, diminish the force of gravity at the equator, and that this diminution does take place is proved by experiment. Hence every thing leads to the conclusion, that the earth has really a motion about its axis, and that the diurnal motion of the heavens is merely an illusion which is produced by it; an illusion not unlike that which represents the heavens as a blue vault, to which all the stars are fixed, and the earth as a plane on which it rests.

But there is another motion of the earth, which, as we have seen, occasions the vicissitudes of the seasons, from winter to spring, summer, and autumn. The proofs of this second motion may be easily gathered from celestial appearances, in nearly the same manner as the former. For as the Sun seems to move round the earth from *east* to *west* in the space of 24 hours, which is owing to the diurnal revolution of the earth upon its axis, from west to east, so, likewise, he seems to have an annual motion in the heavens, and to rise and set continually in different parts of them; which is certainly occasioned by the daily motion of the earth in its orbit or path round the Sun, which it completes in the space of a year. On either hypothesis the appearance is the same; that is, the Sun will appear in motion, and the earth as standing still, to a spectator on the earth, whether the Sun really move round the earth at rest, or the earth move while the Sun is at rest.

To the inhabitants of any one of the planets, the mundane sphere, with the Sun, stars, and all the other planets, will, as to us, appear to move round them from east to west; and accordingly the inhabitants

of our planet, the earth, are only liable to the same delusive appearance with those of the rest. Now it is ascertained from observation, that the orbits of the planets include the Sun as the common centre of them all; but it is only the orbits of the *superior* planets that include the earth, which, however, is not the centre of any one of them. The earth's orbit being ascertained, by observation, to be between those of Venus and Mars, it follows that the earth must turn round the Sun; for as it lies within the orbits of the superior planets, their motion would appear unequal and irregular (on account of the earth not being in the centre), but they would never appear either stationary, or retrograde, without this supposition.—Again, from the orbits and periods of the several planets about the Sun, and the Moon and satellites round the earth, Jupiter, Saturn, and the Georgian planet, it is evident that the law of gravitation is the same towards the earth, Jupiter, and Saturn, as towards the Sun; and the periodical times of the several bodies moving round each, are in the same ratio to their several distances from them. On the supposition of the earth's annual motion, her periodical time exactly suits this law, bearing such a proportion between those of Mars and Venus, as the several other bodies directed by the same law do bear; that is, the squares of the periodical times are, in all, as the cubes of the distances from the centre of their orbits.

If the earth does not move round the Sun, the Sun must move with the Moon round the earth; now, the distance of the Sun to that of the Moon is nearly 400 to 1, and the period of the Moon being about 28 days (see the article for July), the Sun's period should be, by the law above mentioned, full 600[1] years, whereas it is, in fact, but a single year. This con-

[1] It will be $1^3 : 400^3 : 28^2 : P^2$; that is to the square of the periodical time of the Sun; the square root of which being taken, is equal to about 220,000 days, or 600 years.

sideration was, of itself, thought of weight enough to determine the controversy between the two opinions, and to establish the motion of the earth in its orbit for ever.

The masses of the Sun and several of the planets are considerably greater than that of the earth; it is therefore much more simple to make the latter revolve round the Sun, than to put the whole solar system in motion round the earth. What a complication in the heavenly motions would the immobility of the earth suppose! What a rapidity of motion must be given to Jupiter; to Saturn, which is ten times farther from the Sun than the earth is; and to the Georgian planet, which is double the distance of Saturn even, to make them every year revolve round us, at the same time they are revolving round the Sun! This complication, and this rapidity of motion, disappear by transferring the motion to the earth; a motion conformable to the general law, by which the small celestial bodies revolve round the large ones which are placed in their vicinity.

We may further observe that the analogy of the earth with several of the planets confirms this theory: like Jupiter, for instance, it revolves on its axis, and is accompanied by a satellite. An observer on the surface of Jupiter would conclude that the solar system was in motion round him, and the magnitude of that planet would render this illusion less improbable than for the earth. Is it, not, therefore, reasonable to imagine, that the motion of the solar system round us is likewise only an illusion?

To an inhabitant of the Sun, (if there be inhabitants on that body, which Dr. Herschel thinks not at all improbable), these bodies will appear to move from west to east: this identity in the direction indicates a motion of the earth, but that which demonstrates it is evidently the law which exists between the times of the revolutions of the planets and their distances from the Sun. They revolve round it slower, as

their distances are greater, and in such a manner, that the squares of the periodic times are in proportion to the cubes of their mean distances. According to this remarkable law, which will perpetuate the name of Kepler, who first discovered it, the length of a revolution of the earth, supposing it in motion round the Sun, should be exactly what it is, viz. a sidereal year. Is not this an incontestible proof that the earth moves like the other planets, and is subject to the same laws? Besides, would it not be strange to suppose the terrestrial globe, which hardly subtends a visible angle at the Sun, to be immoveable amidst the other planets which are revolving round it, and that the Sun should be carried with them about the earth?

Once more, the force, which serves to retain the planets in their respective orbits round the Sun, balances the centrifugal force, by which they have a tendency to fly off. Ought it not likewise to act upon the earth? and must not the earth oppose to this action the same centrifugal force? Thus the consideration of the celestial motions, as observed from the Sun, leaves no doubt of the real motion of the earth. We shall conclude this subject with the beautiful reasoning of the immortal Milton:

When I behold this goodly frame, this world
Of heaven and earth consisting, and compute
Their magnitudes, this earth a spot, a grain,
An atom, with the firmament compared
And all her numbered stars, that seem to roll
Spaces incomprehensible (for such
Their distance argues, and their swift return
Diurnal), merely to officiate light
Round this opacous earth, this punctual spot
One day and night; in all their vast survey
Useless besides; reasoning, I oft admire
How Nature, wise and frugal, could commit
Such disproportions.

The Naturalist's Diary.

Copious dispenser of delight, bright JUNE,
All hail! the meadows smile with flowery pride,
Shed from thy lavish hand.

AMID the variety of objects with which the face of the earth is clothed, there are many which seem to exist solely for the gratification of the senses of man, and to administer delight[1], but which are, in reality, designed to accomplish other and more important purposes. The innumerable beautiful herbs and flowers which, at this season of the year, meet our eye in every direction, appear designed only to ornament our earth, or to gratify our sense of smelling; but, upon a more intimate acquaintance with their peculiar properties and operations, we find, that, while they contribute to embellish our gardens, they also promote the purification and renovation of the atmosphere, which becomes contaminated from various causes. The sceptic might doubtless reply, that all this might have been accomplished by the simple transpiration of vegetables and flowers, without that variety of odours with which they abound; these may contribute to our pleasure, but where is their *utility?* To this a satisfactory answer can be given: these various odours are designed to point out to the brute creation those herbs or flowers to which they are peculiarly attached, to lead them to those which contribute to their nourishment, and, at the same time, to shun those which are in their nature poisonous. In this instance, then, irrational animals may

[1] For me kind Nature wakes her genial pow'r,
Suckles each herb, and spreads out ev'ry flow'r:
Annual for me, the grape, the rose renew
The juice nectareous, and the balmy dew.

become the instructors of man, and the sceptic might be sent to the brutes to learn wisdom, as well as the sluggard to the ant to be taught a lesson of industry. Brutes, in general, possess the most exquite sense of smelling, and are led by it, principally, in their choice of food; had there not, then, been some method devised, by their beneficent Creator, to enable them to distinguish those different species of plants, which so nearly resemble each other, that they cannot be distinguished by the sight, they would have been in continual danger of perishing, by seeking their repast among those which, to their particular species, would prove inevitably fatal.

Warm weather is, generally, established in June, yet the heat is rarely excessive:—showers of rain are very acceptable at the commencement of the month, as they tend to promote the growth of the young herbage.

The fields of clover (*trifolium pratense*), which are now in blossom, produce a delightful fragrance. Of this plant there are two varieties, the white and the purple; from the latter, the bees extract much honey. The bean blossoms also shed a still more exquisite odour.

Among the insect tribe, one of the most interesting is, in its perfect state, the angler's may-fly (*ephemera vulgata*), which appears about the 4th, and continues nearly a fortnight. It emerges from the water, where it passes its aurelia state, about six in the evening, and dies about eleven at night. Innumerable species of insects are called into life by the heat in this month. Among the most remarkable may be named the grasshopper (*gryllus*), the golden-green beetle (*scarabæus auratus*), various kinds of flies; the cuckoo-spit insect (*cicada spumaria*), and the stag-beetle (*lucanus cervus*).

The several species of the gad-fly (*œstrus bovis—equi*—and *ovis*), the ox, horse, and sheep gad-fly, make their appearance in this month. The female of

this genus is remarkable for the manner in which she deposits her eggs: having fastened on the back of a heifer or cow, by means of a tube she pierces its skin in several places, inserting an egg at each puncture. This operation is not performed without severe pain to the animal on which it is practised, and it is for this reason that cattle are observed to be seized with such violent horror when apprehensive of the approaches of the female œstrus; flying with uncontrollable rapidity, and endeavouring to escape their tormentor by taking refuge on the nearest pond; it being observed that this insect rarely attacks cattle when standing in the water. The practice of docking horses, or depriving them of their tails, is, in many cases, both cruel and unnecessary, and takes away the only weapon with which they can combat the approaches of their insidious enemy.

About the beginning of the month, the pimpernel (*anagallis arvensis*), thyme (*thymus serpyllum*), the bitter sweet nightshade (*solanum dulcamara*), white bryony, the dog rose (*rosa canina*), and the poppy (*papaver somniferum*), have their flowers full blown; and the fern owl may be seen, in the evening, among the branches of oaks, in pursuit of its favourite repast, the fern-chaffer (*scarabæus solstitialis*).

Towards the middle of the month, wheat is in ear, and the flowers of the valerian (*valeriana officinalis*) begin to open. Mullein, viper's bugloss (*echium vulgare*), borage, dog-wood, vervain, the vine (*vitis vinifera*), water hemlock (*phellandrium aquaticum*), and that singular plant the bee orchis[1], have their flowers full blown.

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[1] This flower has a spot in its breast resembling a bee, sipping its honey.

See on that floweret's velvet breast
How close the busy vagrant lies!
His thin-wrought plume, his downy breast,
Th' ambrosial gold that swells his thighs.

The summer solstice happens on the 21st of June, which is the longest day. In the most northern parts of the island, there is scarcely any night at this time, so that a person may read with ease at twelve o'clock at night; the twilight continuing almost from sun-rise to sun-set:

> The light with kind delay prolongs his reign:
> The solemn midnight wears unusual smiles,
> If midnight we may name, where softer shades
> Lend only milder beauties.

The following plants are generally seen in flower about the end of June; goats-beard (*tragopogon pratense*), deadly nightshade (*atropa belladonna*), meadow-sweet (*spiræa ulmaria*), the day-lily (*hemerocallis flava*), the jasmine (*jasminum officinale*), and the holy-oak (*alcea rosea*).

The several kinds of corn come into ear and flower during this month, as well as most of the numerous species of grasses; gooseberries, currants, and strawberries, also begin to ripen. The hay harvest commences about the end of the month, in the southern and midland parts of the kingdom. About this time, also, birds cease their notes:—I heard no birds after the end of June (says Mr. Stillingfleet), except the stone curlew (*charadrius œdicnemus*) whistling late at night; the yellow hammer, goldfinch, and golden-crested wren, now and then chirping. The cuckoo's note also ceases. The rural employment of *sheep-shearing* commences sometimes early in June, but at others not till the middle of the month; the time being regulated by the warmth and settled state of the weather. In many parts of the country, the depriving sheep of their wool is conducted with much ceremony and rural dignity. There is a beautiful description of this festivity in 'Dyer's Fleece,' at the end of the first

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> Perhaps his fragrant load may bind
> His limbs; we'll set the captive free—
> I sought the *living bee* to find,
> And found the *picture of a bee!* LANGHORNE.

book. Thomson thus describes the washing and shearing of sheep, in his SUMMER:

Fast, fast, they plunge amid the flashing wave,
And, panting, labour to the farther shore;
Repeated this, till the deep well-washed fleece
Has drunk the flood, and from his lively haunt
The trout is banished by the sordid stream:
Heavy and dripping, to the breezy brow
Slow move the harmless race; where, as they spread
Their swelling treasures to the sunny ray,
Inly disturbed, and wond'ring what this wild
Outrageous tumult means, their loud complaints
The country tell; and tossed from rock to rock,
Incessant bleatings run around the hills.
At last, of snowy white, the gathered flocks
Are in the wattled pen innumerous pressed
Head above head; and, ranged in lusty rows,
The shepherds sit and whet the sounding shears.
Some mingling, stir the melted tar, and some
Deep on the new-shorn vagrant's heaving side
To stamp his master's cipher ready stand;
Others th' unwilling wether drag along;
And, glorying in his might, the sturdy boy
Holds, by his twisted horns, th' indignant ram.

Much amusement may be derived from an attentive observation of the common white or barn owl, during the mild evenings of this month. The following curious circumstance is recorded by Mr. White [1], of a pair of white owls, which bred under the eaves of the church. 'About an hour before sunset (for then the mice begin to run) they sally forth in quest of prey, and hunt all round the hedges of meadows and small enclosures for them; beating the fields over like a *setting-dog*, and often dropping down in the grass or corn. I have observed these birds for an hour together, during the breeding time, and have found, by my watch, that the owl returns every five minutes with her prey. A piece of address which they show, when they return loaded, should not, I think, be passed over in silence. As they take their prey with their claws, so they carry

[1] Nat. Hist. of Selborne, vol. ii, pp. 259, 260, 8vo ed. 1813.

it in their claws to their nest; but as their feet are necessary, in their ascent under the tiles, they constantly perch, first on the roof of the chancel, and shift the mouse from their claws to their bill, that the feet may be at liberty to take hold of the plate on the wall, as they are rising under the eaves.'

While the Moon, with sudden gleam,
Through the clouds that cover her,
Darts her light upon the stream,
And the poplars gently stir,
Pleased I hear thy boding cry!
Owl, that lov'st the cloudy sky,
Sure, thy notes are harmony.

While the maiden, pale with care,
Wanders to the lonely shade,
Sighs her sorrows to the air,
While the flow'rets round her fade,—
Shrinks to hear thy boding cry,—
Owl, that lov'st the cloudy sky,
To her it is not harmony!

While the wretch, with mournful dole,
Wrings his hands in agony,
Praying for his brother's soul,
Whom he pierced suddenly,—
Shrinks to hear thy boding cry,—
Owl, that lov'st the cloudy sky,—
To him it is not harmony[1].

Mackerel (*scomber, scomber*) are taken in great abundance in this month. The long migration of this fish seems at present to be greatly called in question; and it is thought more probable, that the shoals which appear in such abundance round the more temperate European coasts, in reality reside, during the winter, at no very great distance, immersing themselves in the soft bottom, and remaining in a state of torpidity. From this state, it is reasonable to suppose, they are awakened by the warmth of the returning spring, and gradually recover their former activity. At their first appearance their eyes are observed to be remarkably dim, as if covered with

[1] These pleasing stanzas are by an early anonymous poet, and may be found in Mr. Ellis's Specimens,' vol. iii, p. 351.

a kind of film, which passes off as the season advances, when they appear in their full perfection of colour and vigour. Mackerel are taken, generally, in nets, and, when first caught, exhibit an alternation of the most vivid and beautiful colours; we have seen more than *four thousand* of these delicate and elegant fish taken at a single hawl. Their flavour is much impaired even a few hours after their capture [1].

The *maritime plants* which flower this month, are, the sea-barley (*hordeum maritimum*), sulphur-wort (*pucedanum officinale*), and loose sedge (*carex distans*), in salt marshes; the sea-plantain (*plantago maritima*), among rocks on the sea-coast; the slender-leaved buffonia (*buffonia tenuifolia*), and the tassel pond-weed (*ruppia maritima*), in salt-water ditches. To these may be added, the common alkanet (*anchusa officinalis*), the narrow-leaved pepperwort (*lepidum ruderale*), and the Roman nettle (*urtica pilulifera*), in sea wastes; the black salt-wort (*glaux maritima*), on muddy shores; the sea-chickweed (*arenaria peploides*), and the common sea-rocket (*bunias cakile*), on sandy shores; and the perfoliate cabbage (*brassica orientalis*) among maritime rocks.

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[1] Multitudes of mackerel are taken on our coast: at times they sell exorbitantly dear, but chiefly in the opposite extreme. The first Brighton boat of mackerel sold, the 14th of May, 1807, at Billingsgate, for forty guineas per hundred (seven shillings each), the highest price ever known at that market. The next boat that came in, reduced their value to thirteen guineas per hundred. In 1808, these fish were caught so plentifully at Dover, that they sold sixty for a shilling. At Brighton, in June, the same year, the shoal of mackerel was so great, that one of the boats had the meshes of her nets so closely occupied by them, that it was impossible to drag them in. The fish and nets, therefore, in the end, sank together, the fisherman thereby sustaining a loss of nearly sixty pounds, exclusive of what his cargo, could he have got it into the boat, would have produced. —*Daniel's Sports.*

July.

THIS word is derived from the Latin *Julius*, the surname of C. Cæsar, the dictator, who was born in it. Mark Antony first gave to this month the name of July, which was before called *Quintilis*, as being the fifth month in the year, in the old Roman calendar established by Romulus. 'July, I would have drawn in a jacket of light yellow, eating cherries, with his face and bosom sun-burnt; on his head a wreath of centaurie and wild thyme; a sithe on his shoulders; a bottle at his girdle; carrying the sign Leo.' (*Peacham*, p. 419.) July was, by the Saxons, 'called *heu-monat*, or *hey-monat*, that is to say, hey-moneth, because therein they usually mowed, and made their hey-harvest.' (*Verstegan*, p. 61.)

July, to whom the *Dog-Star* in her train,
Saint James gives oysters, and *Saint Swithin* rain.

CHURCHILL.

Remarkable Days.

2.—VISITATION OF THE BLESSED VIRGIN MARY.

THIS festival was first instituted by Pope Urban VI, in commemoration of that remarkable journey which the Mother of our Lord took into the mountains of Judæa, in order to visit the mother of St. John the Baptist. It was afterwards confirmed, not only by a decree of Pope Boniface IX, but by the Council of Basil, in 1441.

3.—DOG-DAYS BEGIN.

These are a certain number of days before and after the heliacal rising of *Canicula*, or the dog-star, in the morning. The antients imagined that this star so rising occasioned the sultry weather, usually felt in the latter part of the summer, or dog-days; with all the distempers of that sickly season. See Homer's Iliad, lib. v, 10, and Virgil's Æneid, lib. 1. They did not consider that the heliacal rising of this star varies much in the course of a few years, and indeed in the same year in different latitudes; as is now well known. The dog-days in our modern almanacks occupy the time from July 3 to August 11; the name being applied now, as it was formerly, to the hottest time of the year.

4.—TRANSLATION OF SAINT MARTIN.

This day was appointed to commemorate the removal or translation of St. Martin's body from one tomb to another much more noble and magnificent; an honour conferred upon the deceased saint by Perpetuus, one of his successors in the see of Tours. His festival is celebrated on the 11th of November, which see.

7.—THOMAS A BECKET.

This haughty prelate was born in London, in the year 1119, and was the son of Gilbert, a merchant, and Matilda, a Saracen lady, who is said to have

fallen in love with him when he was a prisoner to her father in Jerusalem. Thomas received the first part of his education at Merton Abbey in Surrey, whence he went to Oxford, and afterwards studied at Paris. Being in high favour with Theobald, Archbishop of Canterbury, he sent him to Bononia, to study the civil law; and on his return made him archdeacon of Canterbury and provost of Beverley. Theobald also recommended him to King Henry II in so effectual a manner, that in 1158 he was appointed high chancellor, and preceptor to the prince. Becket now laid aside the churchman, and affected the courtier; he conformed himself in every thing to the king's humour; he partook of all his diversions, and observed the same hours of eating and going to bed. He kept splendid levees, and courted popular applause; and the expenses of his table exceeded those of the first nobility. In 1159 he made a campaign with King Henry into Toulouse, having in his own pay 1200 horse, besides a retinue of 700 knights or gentlemen.

In 1160, he was sent by the king to Paris, to treat of a marriage between prince Henry and the king of France's eldest daughter, in which he succeeded, and returned with the young princess to England. He had not enjoyed the chancellorship above four years, when Archbishop Theobald died; and the king, who was then in Normandy, immediately sent over some trusty persons to England, who managed matters so well with the monks and clergy, that Becket was almost unanimously elected archbishop. His first step, which was to resign the office of chancellor, much offended his benefactor; and his subsequent haughtiness and obstinacy, and the high tone in which he asserted the privileges of the church, further widened the breach, and disturbed the peace of the kingdom. As the guardian of his people, Henry wished for a community of laws; but Becket refused to repress the dis-

orders of his clergy, by suffering them to be tried in the same manner as the laity; and though for a time he assented to the famous constitutions of Clarendon, he retracted his acquiescence, and resigned his archiepiscopal office at the feet of the pope, who not only forgave the error of his judgment by reinstating him, but espoused his cause and annulled the decrees. Supported by the papal power, the primate excommunicated those who favoured the royal cause, and Henry, swollen with indignation, banished his relations and adherents, and sent them in disgrace and indigence to their exiled master. Becket continued to indulge his resentment: not only the representations and entreaties of the clergy, but the interference of the pope, by two cardinals, proved, for a time, abortive with the haughty prelate, who when, in 1167, he condescended to see his sovereign, broke off the conference, because Henry refused to give him the kiss of peace.

In 1169, however, an accommodation was at length concluded between Henry and Becket, upon the confines of Normandy, where the king held the bridle of Becket's horse, while he mounted and dismounted twice. Soon after the archbishop embarked for England; and upon his arrival received an order from the young king to absolve the suspended and excommunicated bishops; but, refusing to comply, the archbishop of York, and the bishops of London and Salisbury, carried their complaint to the king in Normandy, who was highly provoked at this fresh instance of obstinacy in Becket, and said on the occasion, '*That he was an unhappy prince, who maintained a great number of lazy, insignificant persons about him, none of whom had gratitude or spirit enough to revenge him on a single insolent prelate, who gave him so much disturbance;*' or, as some report his words, '*Shall this fellow, who came to court on a lame horse, with all his estate in a wallet behind him, trample upon his king, the royal family, and the*

whole kingdom? Will none of all these lazy cowardly knights whom I maintain, deliver me from this turbulent priest?' This passionate exclamation made too deep an impression on some of those who heard it, particularly on the four following barons, Reginald Fitz-Urse, William de Tracey, Hugh de Morville, and Richard Breto, who formed a resolution either to terrify the archbishop into submission, or to put him to death.

Having laid their plan, they left the court at different times, and took different routes, to prevent suspicion; but being conducted by the devil, as some monkish historians tell us, they all arrived at the castle of Ranulph de Broc, about six miles from Canterbury, on the same day, Dec. 28, 1170, and almost at the same hour. Here they settled the whole scheme of their proceedings, and next morning early set out for Canterbury, accompanied by a body of resolute men, with arms concealed under their clothes. These men they placed in different parts of the city, to prevent any interruption from the citizens. The four barons above-named then went unarmed, with twelve of their company, to the archiepiscopal palace, about eleven o'clock in the forenoon, and were admitted into the apartment where the archbishop sat conversing with some of his clergy. After their admission a long silence ensued, which was at length broken by Reginald Fitz-Urse, who told the archbishop that they were sent by the king to command him to absolve the prelates and others, whom he had excommunicated; and then to go to Winchester, and make satisfaction to the young king, whom he had endeavoured to dethrone. On this a very long and violent altercation followed, in the course of which they gave several hints, that his life was in danger if he did not comply. But he remained undaunted in his refusal. At their departure they charged his servants not to allow him to flee; on which he cried out, with great vehemence,

'*Flee! I will never flee from any man living; I am not come to flee, but to defy the rage of impious assassins.*' When they were gone, his friends blamed him for the roughness of his answers, which had inflamed the fury of his enemies, and earnestly pressed him to make his escape; but he only answered, '*I have no need of your advice: I know what I ought to do.*'

The barons finding their *threats* ineffectual, *put on their coats of mail*, and, taking each a sword in his right hand, and an axe in his left, returned to the palace, but found the gate shut. When they were preparing to break it open, Robert de Broc conducted them up a back staircase, and let them in at a window. A cry then arose, '*They are armed, they are armed!*' on which the clergy hurried the archbishop almost by force into the church, hoping that the sacredness of the place would protect him from violence. They would also have shut the door, but he cried out, '*Begone, ye cowards! I charge you; on your obedience, do not shut the door. What! will you make a castle of a church?*' The conspirators having searched the palace, came to the church, and one of them crying, '*Where is the traitor? Where is the archbishop?* Becket advanced boldly, and said, '*Here I am, an archbishop, but no traitor.*' '*Flee,*' cried the conspirator, '*or you are a dead man!*' '*I will never flee,*' replied Becket. William de Tracey then took hold of his robes, and said, '*You are my prisoner; come along with me.*' But Becket, seizing him by the collar, shook him with so much force, that he almost threw him down. De Tracey, enraged at this resistance, aimed a blow with his sword, which almost cut off the arm of one Edward Grim, a priest, and slightly wounded the archbishop on the head. By three other blows given by the other conspirators, his skull was cloven almost in two, and his brains scattered about the pavement of the church.

The assassins, conscious of their crime, and dreading its consequences, durst not return to the king's court at Normandy, but retired to Knaresborough in Yorkshire, where every body avoided their company, hardly any person even choosing to eat or drink with them. They at length took a voyage to Rome, and, being admitted to penance by Pope Alexander III, they went to Jerusalem; where, according to the pope's order, they spent their lives in penitential austerities, and died in the Black Mountain. They were buried at Jerusalem, without the church door belonging to the Templars, and this inscription was put over them :—

HIC JACENT MISERI,
QUI MARTYRIZAVERUNT
BEATUM ARCHIEPISCOPUM CANTUARIENSEM.

King Henry was much disturbed at the news of Becket's death, and immediately dispatched an embassy to Rome to clear himself from the imputation of being the cause of it. Immediately all divine offices ceased in the church of Canterbury; and this for a year, excepting nine days, at the end of which, by order of the pope, it was re-consecrated. Two years after, Becket was canonized; and the following year, Henry, returning to England, went to Canterbury, where he did penance as a testimony of his regret for the murder of Becket. When he came within sight of the church where the archbishop was buried, he alighted off his horse, and walked barefoot, in the habit of a pilgrim, till he came to Becket's tomb; where, after he had prostrated himself, and prayed for a considerable time, he submitted to be scourged by the monks, and passed all that day and night without any refreshment, and kneeling upon the bare stone. In 1221 Becket's body was taken up, in the presence of King Henry III, and several nobility, and deposited in a rich shrine on the east side of the church. The

miracles said to be wrought at his tomb were so numerous, that we are told two large volumes of them were kept in that church. His shrine was visited from all parts, and enriched with the most costly gifts and offerings.' (*Chalmers' Biog. Dict.*, vol. iv, Art. BECKET.)

15.—SAINT SWITHIN.

Swithin, in the Saxon *Swithum*, received his clerical tonsure, and put on the monastic habit, in the old monastery at Winchester. He was of noble parentage, and passed his youth in the study of grammar, philosophy, and the Scriptures. Swithin was promoted to holy orders by Helmstan, Bishop of Winchester, at whose death, in 852, King Ethelwolf granted him the see. In this he continued eleven years, and died in 868. Swithin desired that he might be buried in the open churchyard, and not in the chancel of the minster, as was usual with other bishops; and his request was complied with: but the monks on his being canonized, considering it disgraceful for the saint to lie in a public cemetery, resolved to remove his body into the choir, which was to have been done, with solemn procession, on the 15th of July. It rained, however, so violently for forty days succeeding, that the design was abandoned as heretical and blasphemous, and they honoured his memory by erecting a chapel over his grave, at which many miraculous cures of all kinds are said to have been wrought. To the above circumstance may be traced the origin of the old saying, 'that, if it rains on St. Swithin's, it will rain forty days following!'

In Poor Robin's Almanack for 1697, are the following lines:—

In this month is St. Swithin's Day;
On which, if that it rain, they say
Full forty days after it will,
Or more or less, some rain distil.

This Swithin was a Saint, I trow,
And Winchester's Bishop also,
Who in his time did many a feat,
As Popish legends do repeat:
A woman having broke her eggs
By stumbling at another's legs,
For which she made a woful cry,
Saint Swithin chanced for to come by,
Who made them all as sound, or more
Than ever that they were before.
But whether this were so or no,
'Tis more than you or I do know.
Better it is to rise betime,
And to make hay while Sun doth shine,
Than to believe in tales and lies
Which evil monks and friars devise.

20.—SAINT MARGARET.

She was born at Antioch, and was the daughter of a Pagan priest. Olybius, president of the East, under the Romans, wished to marry her; but finding that Margaret was a Christian, he postponed his intended nuptials until he could prevail on her to renounce her religion. Our saint, however, was inflexible, and was first tortured, and then beheaded, in the year 278.

22.—MARY MAGDALEN.

This day was first dedicated to the memory of St. Mary Magdalen, by King Edward VI; and in his Common Prayer, the *Gospel* for the day is from St. Luke, chap. vii, verse 36. Our reformers, however, upon a more strict inquiry, finding it doubtful whether this woman, mentioned in the Gospel, was really Mary Magdalen, thought it prudent to discontinue the festival.

25.—SAINT JAMES.

James was surnamed the *Great*, either on account of his age, being esteemed older than the other *James*, or for some peculiar honour conferred upon him by our Lord. He was by birth a Galilean, and partner with Peter in fishing, from which our Lord called him to be one of his disciples. *Mark* i, 19, 20.

He cheerfully complied with the call, *leaving all to follow him.* Soon after this, he was made an apostle; and, with Peter and John his brother, was taken to see the miraculous raising of Jairus's daughter,—Christ's glorious transfiguration,—and was also with our Saviour in the garden a witness of those bitter sufferings which he there endured for us. It does not appear how James was employed after our Lord's ascension. St. Jerome thinks that he preached to the Jews of the dispersion; but that his labours ever carried him at all out of Judea, or even from Jerusalem itself, no authentic history informs us. Of his ardent zeal, no other proof is necessary than his becoming the victim of Herod Agrippa. The Spaniards esteem James their tutelar saint.

26.—SAINT ANNE.

She was the mother of the Virgin Mary, and the wife of Joachim her father. Her festival is celebrated by the Latin church.

Astronomical Occurrences.

Of the Fixed Stars.

WHEN viewed with the best telescopes, the fixed stars do not appear at all magnified, but rather diminished in bulk, inasmuch as the telescope takes off that twinkling appearance which is observed by the naked eye. The smallness of their apparent diameter is proved by the suddenness with which they disappear on their occultations by the Moon. The time this takes does not amount to a single second, which proves that their apparent diameter does not exceed 4″. The brilliancy of their light, compared with their small diameter, leads us to suppose them to be at a much greater distance than the planets, and to consider them as luminous bodies like our Sun, instead of borrowing their light from that luminary like the planets.

The stars, on account of their apparently various magnitudes, have been distributed into several classes: the largest are called stars of the first magnitude; the next to them in lustre, stars of the second magnitude; and so on to the sixth, which are the smallest that are visible to the naked eye. This distribution having been made long before the invention of telescopes, the stars which cannot be seen without the assistance of these instruments are distinguished by the name of telescopic stars.

The antients divided the starry sphere into particular constellations, or systems of stars, according as they lay near one another, so as to occupy those spaces which the figures of different sorts of animals, or other things, would take up, if they were delineated there. Those stars which could not be brought into any particular constellation, were called unformed stars. The division of the stars into different constellations, or asterisms, serves to distinguish them from one another, so that any particular star may be readily found in the heavens by means of a celestial globe, on which the constellations are so delineated, as to put the most remarkable stars into such parts of the figures as are most easily noted. The number of the antient constellations is 48, but upon modern globes there are about 70. On Senex's globes are inserted Bayer's letters; the first in the Greek alphabet being put to the largest star in each constellation, the second to the next, and so on; by which means, every star is as easily found, as if a name were given to it. Thus, in the *Occurrences* of January for the present year, we have given an account of the star μ Ceti being eclipsed by the Moon on New Year's Day; and, by looking on the globe, we instantly find it, and by that means are enabled to direct our views to the heavens to watch the phenomenon.

There is a division of the heavens into three parts: (1.) The Zodiac, so called because most of the constellations in it, which are twelve in number, have the names of animals: these are,

Aries, the Ram.	*Libra*, the Balance.
Taurus, the Bull.	*Scorpio*, the Scorpion.
Gemini, the Twins.	*Sagittarius*, the Archer.
Cancer, the Crab.	*Capricornus*, the Goat.
Leo, the Lion.	*Aquarius*, the Water-Bearer.
Virgo, the Virgin.	*Pisces*, the Fishes.

The zodiac goes quite round the heavens: it is 16 degrees broad, so that it takes in the orbits of all the planets, and likewise the orbit of the Moon. Along the middle of this zone, or belt, is the ecliptic, or circle which the earth describes annually as seen from the Sun, and which the Sun appears to describe as seen from the earth. (2.) All that region of the heavens which is on the north side of the zodiac, containing 21 of the antient constellations; and (3.) That on the south side, containing 15.

New stars sometimes appear, while others disappear. Several stars mentioned by antient astronomers are not now to be found: several are now visible to the naked eye, which are not mentioned in antient catalogues; and some stars have suddenly appeared, and again, after a considerable interval, vanished. The following apparently well authenticated examples have been noted: The first new star of which we have an accurate account is that discovered by Cornelius Jansen, November 8, 1572, in the chair of Cassiopeia: it exceeded Sirius in brilliancy, and Jupiter in apparent magnitude; it gradually decayed, and, after 16 months, disappeared. On the 13th of August 1596, David Fabricius observed a new star in the neck of the Whale, and it disappeared after October in the same year, but was supposed to be again discovered in the year 1637. In the year 1600, William Jansenus discovered a changeable star in the neck of the Swan. It was seen by Kepler, who wrote a treatise upon it, and determined its place to be 16° 18′ ♒, and 55° 30′ or 32′ north latitude. Ricciolus saw it in 1616, 1621, and 1624. Cassini saw it again in 1655; it increased till 1660; then decreased, and, at the end of 1661, it disappeared. In November

1665, it appeared again, and disappeared in 1681. In 1715 it appeared, as it does at present, and is of the sixth magnitude. In 1686, Kircher observed χ in the Swan to be a changeable star in the neck of that constellation; and, from 20 years' observations, the period of the return of the same phases was found to be 405 days. In 1604, Kepler discovered a new star near the heel of Serpentarius, so very brilliant that it exceeded every fixed star, and even Jupiter, in apparent magnitude.

Montanari discovered two stars in the ship marked β and γ by Bayer to be wanting: he saw them in 1664, but lost them in 1668. Mr. Goodricke has discovered the periodical variations of Algol, or β, in Medusa's head to be about 2 d. 22 h. Its greatest brightness is of the second magnitude, and least of the fourth.

The meridian height of the Sun begins now to decline; of course the day will become shorter, and the Sun's rising and setting will be later in the one case and earlier in the other.

Friday,	1st,	Sun rises 45 m. after 3.	Sun sets 15 m. after 8	
Monday,	11th,	52	8	8
Thursday,	21st,	3	57	7
Sunday,	31st,	17	43	7

Equation of Time.—The following table will show what is to be added to the apparent time as exhibited on the dial, in order to set the chronometer to equal or true time, for each fifth day of the month:—

			m.	s.
Friday,	1st,	to the time shown on the dial ADD	3	16
Wednesday,	6th,		4	11
Monday,	11th,		4	57
Saturday,	16th,		5	33
Thursday,	21st,		5	57
Tuesday,	26th,		6	7
Sunday,	31st,		6	1

The Sun will enter the sign Leo on the 23d day of July, at 57 m. after 1 o'clock at noon.

The Moon will be at the full on the 2d day, at 34 m.

after 4 in the afternoon; it enters its last quarter on the 10th, at 54 m. past 2 in the afternoon: the new Moon, or change, occurs at 26 m. past 6 in the morning of the 17th, and it enters its first quarter at 8 m. past 4 in the morning of the 24th.

The time of the Moon's rising for the first five days after it is full is as follows, viz.

July 3	57 m. past	8
4	35	9
5	7	10
6	33	10
7	56	10

There will be a solar eclipse on the 17th at the time of new Moon or change, but it will be invisible in these parts.

On the 8th, Venus will eclipse the star marked ε ♉, the star being 23 m. south of the planet's centre; and on the 16th it will eclipse the star 1 ♉, this star being 43′ north of the planet's centre. On the 30th, the same planet will eclipse η ♊; and on the 31st, μ ♊; and in both cases the stars will be 22 m. north of the planet's centre. Mercury is stationary on the 27th, and its greatest elongation will be on the 12th. Saturn will be in opposition to the Sun at ½ past 10 o'clock on the 20th. There will be no visible eclipse of any of Jupiter's satellites this month.

VIEW OF THE SOLAR SYSTEM.

Of the Moon.

Next to the Sun, the most conspicuous of all the heavenly bodies is the Moon. The changes which it undergoes are more striking and more frequent than those of the Sun, and its apparent motions much more rapid: hence they were attended to, even before those of the Sun were known; a fact which explains why the first inhabitants of the earth reckoned their time by the Moon's motions, and of course followed the lunar instead of the solar year.

The Moon has a peculiar motion from east to west, which is known from observation; for if we attend to her any evening when she is situated near a given fixed star, we shall find her, in 24 hours, about 13 east of that star, and her distance continually increases, till at last, after a certain number of days, she returns again to the same star from the west, having performed a complete revolution in the heavens.—From a long series of observations, it has been ascertained that the Moon makes a complete revolution in 24 d. 7 h. 43 m.; this is called the periodical month; but, if we refer to the time passed from new Moon to new Moon again, the month consists of 29 d. 12 h. 44 m., which is called the synodical month. This difference is occasioned by the earth's annual motion in its orbit. Thus, if the earth had no motion, the Moon would make a complete round in 27 d. 7 h. 4 m.; but while the Moon is describing her journey, the earth has passed through nearly a twelfth part of its orbit which the Moon must also describe before the two bodies come again into the same position that they before held with respect to the Sun: this takes up so much more time, as to make her synodical month equal to 29 d. 12 h. 44 m. The Moon's motion in her orbit is more unequal than the apparent motion of the Sun: in one part of her orbit she moves faster, in another slower. By knowing the time of a complete revolution, we can easily calculate the mean motion for a day, or any given time, and the mean motion is called the mean anomaly. The true motion is called the true anomaly; the difference between the two is called the *equation*. Now the Moon's equation sometimes amounts to 6° 18′ 32″. Her apparent diameter varies with the velocity of her angular motion. When she moves the fastest, her diameter is largest; it is smallest when her angular motion is slowest. Hence it follows that the distance of the Moon from the earth varies.—Kepler was the first person who ascertained that the

orbit of the Moon is an ellipse, having the earth in one of its foci. Her imaginary radius-vector describes equal areas in equal times, and her angular motion is inversely proportional to the squares of her distances from the earth.

The point of the Moon's orbit which is nearest the earth is called the perigee; the opposite point is the apogee. The line which joins these opposite points, is called the line of the Moon's apsides. It moves slowly eastward, completing a sidereal revolution in about 9 years.

The Moon's orbit is inclined to the ecliptic at an angle of 5°, and the points where it intersects the ecliptic are called the *nodes*. Their position is not fixed in the heavens. They have a retrograde motion, that is to say, a motion contrary to that of the Sun; and they make a complete revolution in the heavens in a little less than 19 years. The *ascending* node is that in which the Moon rises above the ecliptic towards the north pole; the *descending* node, that in which she sinks below the equator towards the south pole.

The mean distance of the Moon from the earth is 240,000 miles, and, as their respective diameters are as about 11 to 3, the bulk of the earth is to that of the Moon as $11^3 : 3^3$; or as 1331 : 27; or as 49 : 1. That is, the earth is 49 times as large as the Moon.

The different appearances or phases of the Moon constitute some of the most striking phenomena of the heavens. When she emerges from the rays of the Sun in an evening, she appears after sun-set as a small crescent just visible. The size of this crescent increases continually, as she separates to a greater distance from the Sun; and when she is exactly in opposition to that luminary, she appears under the form of a complete circle. This circle now declines, changing into a crescent as she approaches nearer that luminary, exactly in the same manner as it had increased, till at length she disappears alto-

gether, plunging into the Sun's rays in the morning at sun-rise.

The Moon is an opaque globe, like the earth, and shines only by reflecting the light of the Sun; therefore, while that half of her which is towards the Sun is enlightened, the other half must be dark and invisible: hence she disappears when she comes between us and the Sun, because her dark side is then towards us. When she has gone a little way forward, we see a little of her enlightened side; which still increases to our view as she advances forward, until she comes to be opposite to the Sun, and then her whole enlightened side is towards the earth, and she appears with a round illuminated orb, which we call the full Moon, her dark side being then turned away from the earth. From the full she seems to decrease gradually, as she goes through the other half of her course, showing less and less of her enlightened side every day, till her next change or conjunction with the Sun, and then she disappears as before.

The axis of the Moon being nearly perpendicular to the ecliptic, it has scarcely any difference of seasons. One half of the Moon's surface has no darkness at any time, the earth constantly affording it a strong light in the absence of the Sun; while the other half has a fortnight's darkness and a fortnight's light by turns. Our earth, unquestionably, performs the office of a Moon to the Moon, waxing and waning regularly, but appearing thirteen times as large, and, of course, affording thirteen times as much light as she does to us. When she changes to us, the earth appears full to her; and when she is in her first quarter to us, the earth is in the third quarter to her, and *vice versa*. To the Moon the earth seems to be the largest body in the universe, and must indeed be a most magnificent sight.

We come now to speak of Eclipses, which formerly were subjects of dread and terror, but which

philosophers have converted to the purposes of utility and instruction. The Moon can only be eclipsed by the interposition of an opaque body, which intercepts from it the light of the Sun; and it is obvious that this opaque body is the earth, because the eclipses of the Moon never happen, except when the Moon is in opposition, and consequently when the earth is interposed between her and the Sun. The globe of the earth projects behind it a conical shadow, the axis of which is the straight line that joins the centres of the earth and Sun, and which terminates at the point when the apparent diameters of these two bodies become equal. The diameters of these two bodies, seen from the centre of the Moon in opposition, are nearly in the proportion of 3 for the Sun and 11 for the earth. Therefore the conical shadow of the earth is at least thrice as long as the distance between the earth and Moon, and its breadth at the point where it is traversed by the Moon more than double the diameter of that luminary. The Moon, therefore, would be eclipsed every time it is in opposition, if the plane of the orbit coincided with the ecliptic. But in consequence of the mutual inclination of these two planes, the Moon, when in opposition, is often elevated above the earth's shadow, or depressed below it, and never can pass through that shadow unless when it is near the nodes. If the whole of the Moon's disk plunges into the shadow, the eclipse is said to be total; if only a part of the disk enter the shadow, the eclipse is said to be partial.

The Moon's diameter, as well as the Sun's, is supposed to be divided into 12 equal parts, called digits; and so many of these parts as are darkened by the earth's shadow, so many digits is the Moon said to be eclipsed. All that the Moon is eclipsed above 12 digits, shows how far the shadow of the earth is over the body of the Moon, on that edge to which she is nearest at the middle of the eclipse.

Eclipses of the Sun only take place during the conjunctions of the Sun and earth; they are occasioned by the Moon's body being interposed between the Sun and earth, or, in other words, by the earth's being plunged in the shadow of the Moon. The Moon, though much smaller than the Sun, is so much nearer to the earth, that its apparent diameter does not differ much from the diameter of that luminary; and, in consequence of the changes which take place in the apparent diameter of these bodies, it happens that, in some positions, the apparent diameter of the Moon is greater than that of the Sun. If we suppose the centres of the Sun and Moon in the same straight line with the eye of the spectator placed on the earth, he will see the Sun eclipsed. If the apparent diameter of the Moon happen to surpass that of the Sun, the eclipse will be total; but if the Moon's diameter be the smallest, the observer, if properly situated, will see a luminous ring, formed by that of the Sun's disk, which exceeds that of the Moon's, and the eclipse in this case is called annular. If the centre of the Moon is not in the same straight line which joins the observer and the centre of the Sun, the eclipse can only be partial, as the Moon can only conceal a part of the Sun's disk: on these accounts, there must necessarily be a great variety in the appearances of solar eclipses. We may add also to these causes of variety, the elevation of the Moon above the horizon, which is the cause of considerable changes in the diameter; for it is a fact, well and generally known, that the Moon's diameter appears larger when she is near the horizon than when she is elevated above it: and as the Moon's height above the horizon varies according to the longitude of the observer, it follows that the solar eclipses will not have the same appearance to observers situated in different longitudes on the earth. One observer may see an eclipse which does not happen to another in

a different situation, and yet the latter as well as the former shall be above the horizon in the same hemisphere; and in this respect the solar differ from the lunar eclipses, which are the same to all the inhabitants of the earth.

We often see, says La Place, the shadow of a cloud, transported by the winds, rapidly pass over hills and valleys, depriving those spectators which it reaches of the light of the Sun that others are enjoying; this is the exact image of a total eclipse of the Sun. A profound night, which, under favourable circumstances, may last from four to five minutes, accompanies these eclipses; the sudden disappearance of the Sun, with the solemn darkness that succeeds, fills all animals with dread; the stars, which had been effaced by the light of the day, show themselves in full lustre, and the heaven resembles the most profound night: round the lunar disk, a crown of pale light has been perceived, which is thought to be the solar atmosphere, for its extent cannot accord with the Moon, as it has been ascertained, by eclipses of the Sun and stars, that the lunar atmosphere is nearly insensible.

The Moon does not entirely disappear in its eclipse, but is still enlightened by a very faint light that comes to it by the Sun's rays inflected through the terrestrial atmosphere; and but for the great absorption of these rays by our atmosphere, its brightness would be more vivid than when at the full Moon. We may sometimes distinguish, particularly about the time of new Moon, that part of the lunar disk which is not enlightened by the Sun: this feeble light is the effect of the light which the illuminated hemisphere of the earth reflects upon the Moon: what proves this is, that it is most sensible at the time of new Moon, when the greatest part of this hemisphere is directed to the Moon; for it is clear that, to a spectator in the Moon, the earth will present a succession of phases, similar to that which

the Moon presents to us, but accompanied by a much more intense light, from the greater extent of the terrestrial surface.

Mountains of a great height rise up from the surface of the Moon; their shadows, projected on the plains, form spots which vary with the position of the Sun: upon the edge of the enlightened disk we see these mountains forming an indented border, extending beyond the line of light by a quantity, which lead to conclusions respecting their real height above the surface. We recognize likewise, by the direction of the shadows, that the surface is broken by cavities, nearly resembling the basons of our seas. Lastly, the lunar surface seems to exhibit traces of volcanoes: several observers have occasionally seen upon the unenlightened part a vivid light, which they have attributed to a volcanic eruption, and hence the formation of several new lunar spots has been accounted for.

The Naturalist's Diary.

Crowned with a wreath of lilies, breathing cool
Their fragrance o'er his throbbing temples, comes
JULY, with languid step, and, panting, asks
The shade refreshful, and the dropping fount.

THIS month is, generally, accounted the hottest in the year. In consequence of the excessive heat, an evaporation takes place from the surface of the earth and waters, and large clouds are formed, which pour down their watery stores, and deluge the country with floods; frequently laying the full-grown corn. These summer storms are generally attended by thunder and lightning. During the intense heat of this month, we eagerly seek the luxury of cooling shades. Bathing, too, is both agreeable and healthful at this time:

The pool transparent to its pebbly bed,
With here and there a slowly-gliding trout,

Invites the throbbing, half reluctant, breast
To plunge :——
—Smooth, in sinuous course, the swimmer winds,
Now, with extended arms, rowing his way;
And now, with sunward face, he floating lies.

Animals are oppressed with universal languor, and either bend their way to pools of water, the coverts of the forest, or to any place that will shade them from the almost vertical Sun. In a hot summer's noon,

The daw,
The rook and magpie, to the grey-grown oaks
That the calm village in their verdant arms,
Sheltering, embrace, direct their lazy flight;
Where on the mingling boughs they sit embowered,
All the hot noon, till cooler hours arise.
Faint, underneath, the household fowls convene;
And in a corner of the buzzing shade,
The house-dog, with the vacant greyhound, lies
Outstretched and sleepy. In his slumbers, one
Attacks the nightly thief, and one exults
O'er hill and dale; till, wakened by the wasp,
They, starting, *snap*.

The flowers which blossomed in the last month soon mature their seeds, and hasten to decay. A new race succeeds, which demands all the fervid rays of a solstitial Sun to bring it to perfection.

At the beginning of the month, the beech (*fagus sylvatica*), the wild carrot (*daucus carrota*), the calathian violet (*gentiana pneumonanthe*), betony, nightshade (*circæa lutetiana*), lavender (*lavendula spica*), and the wild angelica (*angelica sylvestris*), have their flowers full blown; and the flowers of the white lily (*lilium candidum*) begin to open: the thistle, sowthistle, hawkweed, blue bottle (*centaurea cyanus*), marygold, golden rod, camomile, and sunflower; the whole race of sedums and cotyledons; and the aquatic and marsh plants, as bulrush, water-lily, &c. flourish this month.

The different tribes of insects, which, for the most part, are hatched in the spring, are now in full vigour; but the plenitude of their enjoyment is limited indeed, for they die at the approach of winter.

Poor insect! what a little day
  Of sunny bliss is thine!
And yet thou spread'st thy light wings gay,
  And bid'st them, spreading, shine.

Thou bumm'st thy short and busy tune,
  Unmindful of the blast;
And careless, while 'tis burning noon,
  How quick that noon be past.

A show'r would lay thy beauty low;
  A dew of twilight be
The torrent of thy overthrow,
  Thy storm of destiny!

Then spread thy little shining wing,
  Hum on thy busy lay!
For *man*, like *thee*, has but his spring;
  Like *thine*, it fades away!

MRS. ROBINSON.

The first state in which insects appear is that of the *ovum*, or egg; from the egg is hatched the insect in its larve or caterpillar state. The larva, or maggot, crawls on many feet, and is extremely voracious, devouring the herbage, and stripping trees of their leaves. When the time arrives in which the larva or caterpillar is to change into the next state, viz. that of chrysalis, or *pupa*, it ceases to feed; and, having placed itself in some quiet situation for the purpose, lies still for several hours; and then, by a kind of laborious effort, frequently repeated, divests itself of its external skin, or larva coat, and immediately appears in the very different form of a chrysalis or pupa. From this state emerges, at length, the insect, in its complete or ultimate form, from which it can never change; nor can it receive any further increase of growth. This last state is denominated *imago*.

Insects now swarm in every part of creation. The following lines beautifully describe their various haunts:—

To sunny waters some
By fatal instinct fly; where on the pool
They, sportive, wheel; or, sailing down the stream,
Are snatched immediate by the quick-eyed trout,
Or darting salmon. Thro' the greenwood glade

Some love to stray; there lodged, amused and fed,
In the fresh leaf. Luxurious, others make
The meads their choice, and visit ev'ry flow'r,
And ev'ry latent herb. Some to the house,
The fold, and dairy, hungry, bend their flight;
Sip round the pail, or taste the curdling cheese.

THOMSON.

Towards the middle of the month, the potato (*solanum tuberosum*), the spiked willow (*spiræa salicifolia*), jessamine (*jasminum officinale*), hyssop (*hyssopus officinalis*), the bell-flower (*campanula*), and the white lily, have their flowers full blown.

Pomona now begins to offer her fruits, to allay the parching thirst; currants, gooseberries, raspberries, strawberries, cherries, and cranberries, are all peculiarly refreshing at this season. But of the luscious fruits of warmer climates we must be satisfied with the poet's description, exclaiming with him,

Bear me to the citron groves;
To where the lemon and the piercing lime,
With the deep orange, glowing thro' the green,
Their lighter glories blend. Lay me reclined
Beneath the spreading tamarind that shakes,
Fanned by the breeze, its fever-cooling fruit.
Deep in the night the massy locust sheds,
Quench my hot limbs; or lead me through the maze,
Embowering endless, of the Indian fig;
Or thrown at gayer ease, on some fair brow,
Let me behold, by breezy murmurs cooled,
Broad o'er my head the verdant cedar wave,
And high palmettoes lift their graceful shade.
O stretched amid these orchards of the sun,
Give me to drain the cocoa's milky bowl,
And from the palm to draw its freshening wine!

Towards the end of the month, the flowers of the laurustinus (*viburnum tinus*), and the burdock (*arctium lappa*), begin to open; and the elecampane (*inula helenium*), the amaranth (*amaranthus caudatus*), the great water plantain (*alisma plantago*), water mint (*mentha aquatica*), and the common nightshade, have their flowers full blown.

Young frogs leave their ponds, and resort to the

tall grass for shelter; swallows and martins congregate previously to their departure; young partridges are found among the corn; and poultry moult. The hoary beetle *(scarabæus solstitialis)* makes its appearance; bees begin to expel and kill drones; and the flying ants quit their nests.

Ants live in large societies, somewhat in the manner of bees or wasps, and are, like them, divided into males, females, and neutrals. This latter class appears to conduct the business of the nest, which is usually placed at a small distance from the surface, in some slight elevation, either prepared by the insects themselves, or previously formed by some other animals, as moles, &c. They feed both on animal and vegetable substances, devouring the smallest kinds of insects, caterpillars, &c. as well as fruits of different kinds. The fondness of ants for animal food is often turned to good account by anatomists. When they wish to obtain the skeleton of any animal too small or delicate to admit of being prepared in the usual way, the animal is disposed in a proper position, in a small box, with perforations in the lid, and deposited in a large ant hill; in consequence, the softer parts are eaten away, and the skeleton remains. Thus, very elegant skeletons of frogs, snakes, &c. may be obtained.

The common or black ant *(formica nigra)* is a well known inhabitant of our fields and gardens, residing in great numbers between mole-hills and other elevated spots. It is of a brownish black colour, and of a glossy or polished surface. The eggs of this species are deposited early in the spring, and are extremely small, and of a white colour. From these are hatched the larvæ, which are of a thickish form, destitute of legs, and somewhat resemble, in miniature, the maggots of wasps and bees. They are carefully nourished by the *neutral* or labouring ants, till they are arrived at their full growth, when they inclose themselves in smooth, oval, pale yellow silken webs

or cases, in which state they are properly known by the mistaken title of ant-eggs; the real eggs, as before observed, being white, and extremely small. It is generally in the months of June and July that the larvæ thus inclose themselves. The chrysalis, if taken out of its silken case, is of a white colour, and exhibits all the limbs of the future animal in an imperfect or contracted state. During the time of their remaining in chrysalis, the neutral ants attend them with the same care as when in their larve state, frequently shifting their situation[1], and placing them at greater or smaller elevations, according to the different state of the atmosphere.

About the latter end of this month, or the beginning of August, the males and females may be observed in the nests: these differ from the neutrals in being furnished with wings, and the female is far larger than the male; the body equalling in size that of the common window fly, and the upper wings being very long and large. At this time of the year, the males and females emigrate in vast numbers, sometimes flying at a considerable height, and sometimes creeping along the surface. It is not uncommon to see them enter houses at this period, attracted by sweets in particular, either moist or dry. During the winter, this species, like the rest of the European ants, *remains in a state of torpor, without laying up provisions for that season*, as erroneously supposed; and, during the spring, emerges from its concealment, and recommences its labours.—(*Shaw's Zoology*, vol. vi, part 2, p. 352.)

The different species of ants, like the nations of our own species, are distinguished from each other by great diversities of manners. This is strikingly shown in the variety of modes in which they construct their

[1] This care of the ants, in conveying their pupæ from place to place, seems to have been often mistaken for a sedulous industry in collecting grains of wheat, which the pupæ, on a cursory view, much resemble.

habitations. Some employ merely earth as the material; some collect, for the same purpose, fragments of leaves, of bark, or of straw; others use nothing but finely pulverised portions of decayed wood. The solid substance of trees is excavated by another species into numerous apartments, having regular communications with one another. Various other modifications may be observed in the architecture of the different species. The most perfect specimens of workmanship are generally exhibited by the smaller ants. The brown ant is particularly remarkable among the masonic tribes. Their nests are formed of parallel or concentric stories, each four or five lines in height; the partitions being about half a line in thickness, and built of such fine materials, that the interior appears perfectly smooth. On examining each of these stories, we discover chambers of different sizes, having long galleries of communication. The ceilings of the larger spaces are supported by small pillars, sometimes by slender walls, and in other cases by arches. Some cells have but a single entrance; others have passages, which open from the story underneath. In other parts, still larger central spaces, or halls, are met with, in which a great number of passages terminate, like the streets and avenues to a market place. The whole nest often contains twenty of these stories, above the level of the ground, and at least as many below it. The use of this numerous series of rooms will appear in the sequel. The surface of the nest is covered with a thicker wall, and has several doors, admitting, in the daytime, free ingress and egress. This species of ant is unable to bear much heat. During the day, therefore, and particularly when the sun shines, their doors are closed; and they either keep at home, or venture out only through the subterraneous passages. When the dew has given freshness to the nest, and softened the earthy materials on its surface, they begin to make their appearance above ground. On the first shower of rain

that occurs, the whole swarm are apprised of it, and immediately resume their architectural labours. While some are engaged in removing the earth below, others are employed in building an additional story on the top; the masons making use of the materials furnished by the miners. The plan of the cells and partitions is first traced in relief on the walls, which are seen gradually to arise, leaving empty spaces between them. The beginnings of pillars indicate the situation of the future halls; and the rising partitions show the form of the intended passages. Upon the plan thus traced they continue building, till they have arrived at a sufficient elevation. Masses of moistened earth are then applied at right angles to the tops of the walls, on each side, and continued in a horizontal direction till they meet in the middle. The ceilings of the larger chambers are completed in the same manner; the workers beginning from the angles of the walls, and from the tops of the pillars which have been raised in the centre. The largest of these chambers, which might be compared to the *town hall*, and is frequently more than *two inches* in diameter, is completed with apparently as much ease as the rest. This busy crowd of masons, arriving in every direction laden with materials for the building, hastening to avail themselves of the rain to carry on their work, and yet observing the most perfect order in their operations, present the most interesting and amusing spectacle. They raise a single story in about seven or eight hours, forming a general roof as a covering to the whole; and they go on, adding other stories, so long as the rain affords them the facility of moulding the materials. When the rain ceases, and is succeeded by a drying wind, before they have completed their work, the earth ceasing to adhere together, and crumbling into powder, frustrates all their labours: as soon as they find this to be the case, they, with one accord, set about destroying the cells which they had begun, but had not been able

to cover in, and distribute the materials over the upper story of what they had completed.

In tracing the design of the cells and galleries, each ant appears to follow its own fancy. A want of accordance must therefore frequently take place at the point where their works join; but they never appear to be embarrassed by any difficulties of this kind. An instance is related, by M. Huber, in which two opposite walls were made of such different elevations, that the ceiling of the one, if continued, would not have reached above half way of the height of the other. An experienced ant arriving at the spot seemed struck with the defect, and immediately destroyed the lower ceiling, built up the wall to the proper height, and formed a new ceiling with the materials of the former.

The food which ants appear to relish above all others, is an exudation from the bodies of several species of aphis, insects which abound on the plants in the vicinity of ant hills. This species of honey is absorbed with great avidity by the ants, and apparently without the least detriment to the insect that yields it. This fact had already been noticed by Boissier de Sauvages; but several very interesting particulars, as to the mode in which this exeretion is procured, have been brought to light by M. Huber. He informs us, that the liquor is voluntarily given out by the aphis, when solicited to do so by the ant, who, for that purpose, strikes it gently, but repeatedly, with its antennæ, using the same motions as it does when caressing its young. He is led to believe, from observation, that the aphis retains this liquor for a longer time when the ants are not at hand to receive it. A single aphis is sufficient to supply in this way many ants with a plentiful meal. Even those among them who had acquired wings, and could therefore have easily escaped from the ants, if they had been so disposed, yielded this honey as freely as the others, and with as little appearance of fear or constraint.

Most insects become torpid when their temperature is much reduced. When it approaches the freezing point, they fall into a deep lethargy, and in that state require no food. Ants present a remarkable exception to this rule; for they are not benumbed till the thermometer has sunk to 27° of Fahrenheit, or 5 degrees below the freezing point. They therefore have need of a supply of provisions during the greatest part of the winter; although it is true that they are satisfied with much less than in summer. Their principal resource, however, under these circumstances, is still the same, namely, the honey of the aphis; which natural secretion appears to be expressly designed for the subsistence of ants. What confirms this view of the intentions of nature is, that the aphis becomes torpid at precisely the same temperature as the ant; a coincidence which it is hardly possible to attribute to mere chance. The winter haunts of the aphis, which are chiefly the roots of trees and shrubs, are well known to their pursuers; and when the cold is not excessive, they regularly go out to seek their accustomed supply from these insects. Some species of ants have even sufficient foresight to obviate the necessity of these journies; they bring these animals to their own nests, where they lodge them near the vegetables on which they feed; while the domestic ants prevent them from stirring out, guarding them with great care, and defending them with as much zeal as they do their own young.

The accounts given of ants inhabiting other climates, sufficiently show what formidable power they acquire when the efforts of numbers are combined. M. Malonet mentions, in his account of his travels through the forests of Guyana, his arriving at a savannah, extending in a level plain beyond the visible horizon, and in which he beheld a structure that appeared to have been raised by human industry. M. de Prefontaine, who accompanied him in the expedition, informed him that it was an ant hill, which they

could not approach without danger of being devoured. They passed some of the paths frequented by the labourers, which belonged to a very large species of black ants. The nest they had constructed, which had the form of a truncated pyramid, appeared to be from fifteen to twenty feet in height, on a base of thirty or forty feet. He was told that when the new settlers, in their attempts to clear the country, happened to meet with any of these fortresses, they were obliged to abandon the spot, unless they could muster sufficient forces to lay regular siege to the enemy. This they did by digging a circular trench all round the nest, and filling it with a large quantity of dried wood, to the whole of which they set fire at the same time, by lighting it in different parts all round the circumference. While the entrenchments are blazing, the edifice may be destroyed by firing at it with cannon; and the ants being by this means dispersed, have no avenue for escape, except through the flames, in which they perish. The narrations of Mr. Smeathman (*Phil. Tran.* vol. lxxi, p. 139), relative to the white ant of Africa, are also calculated to raise our ideas of the magnitude of these republics of insects, which must surpass the largest empire in the numbers of their population[1].

The maritime plants which flower in July are the club rush (*scirpus maritimus*), bearded cat's tail grass (*phleum crinitum*), bulbous fox tail grass (*alopecurus bulbosus*), the reflexed and creeping meadow grass (*poa distans* and *maritima*), the field eryngo (*eryngium campestre*), parsley water drop-wort (*œnanthe pimpinelloides*), smooth sea-heath (*frankenia lævis*); and the golden dock (*rumex maritimus*); all of which are to be found in salt marshes.

[1] For much curious information relative to the manners and habits of ants, see M. Huber's *Recherches sur les Mœurs des Fourmis Indigènes, Paris*, 1810; and a very able analysis of this work, in the Edinburgh Review, vol. xx, p. 143.

On *sandy shores* may be seen the sea-mat weed (*arundo arenaria*), upright sea-lime grass (*elymus arenarius*), the sea lungwort (*pulmonaria maritima*), the sea bind-weed (*convolvulus soldanella*), saltwort (*salsola*), sea-holly (*eryngium maritimum*): prickly samphire (*echinophora spinosa*), and the sea-lavender (*statice limonium*), are found on maritime rocks; and the sea pea (*pisum maritimum*) on rocky shores.

About the middle of this month, *pilchards* (*clupea pilchardus*) appear in vast shoals off the Cornish coasts. In August 1808, the greatest abundance of fish ever known, particularly *pilchards*, were caught in Mount's Bay. Upwards of 10,000 hogsheads were landed at St. Ives, and sold for ten-pence the cart-load, for manure. Turbot fetched only from one penny to two-pence per pound, and the inferior fish were not worth catching. In September 1811, upwards of 1200 hogsheads of fine pilchards were caught off Fowey; a large quantity has also been taken in Whitsund Bay, adjoining Plymouth. The glut was so great, that they sold at three-pence per hundred. The Seans at Mevagessey, in September 1812, inclosed a thousand hogsheads, and one boat at Newlyn had six hundred hakes on board, which sold for two shillings and nine-pence, a burn, of twenty-one fish. Pilchards form a great article of food when corn is scarce, and are very extensively used as a *manure*: they also furnish a large quantity of oil. This fish disappears at the approach of winter.

The farmer's labours, in this month, are various and important. In the southern parts of the island, the corn harvest commences; but August is, generally, dedicated to this grateful employment; though, in some districts, the work of the sickle is protracted till September or even October. The hay-harvest in the north is generally completed in July. Flax and hemp are pulled in this month.

August.

SEXTILIS was the antient Roman name of this month, being the sixth from March. The Emperor Augustus changed this name, and gave it his own, because in this month Cæsar Augustus took possession of his first consulship, celebrated three triumphs, reduced Egypt under the power of the Roman people, and put an end to all civil wars. 'August shall bear the form of a young man of a fierce and coleric aspect, in a flame coloured garment; upon his head a garland of wheat and rie; upon his arm a basket of all manner of ripe fruits, as peares, plums, apples, gooseberries: at his belt (as our *Spencer* describeth him) a sickle, bearing the sign *Virgo*.' (*Peacham*, 419, 20.) 'August they called *arn-monat* (more rightly *barn-monat*), intending thereby the then filling of their barnes with corne.' (*Verstegan*, p. 61.)

Remarkable Days.

1.—LAMMAS DAY.

THIS day, in the Romish church, is generally called *St. Peter in the Fetters*, in commemoration of this apostle's imprisonment. Some imagine that it was named Lammas Day, from St. Peter's being patron of the lambs, as our Saviour gave him this particular charge, *Feed my Lambs*. It is most probably derived from an old Saxon term, signifying *Loaf-Mass*; as it was customary for the Saxons to offer an oblation of loaves, made of new wheat, on this day, as the first-fruits of their new corn.

6.—TRANSFIGURATION.

Though this day was observed in remembrance of our Lord's *Transfiguration* on the Mount, by the primitive Christians, yet it is but of recent date in the church of Rome, as it was not instituted by Pope Calixtus until the year 1455.

7.—NAME OF JESUS.

Before the Reformation, this day was dedicated to *Afra*, a woman who had been converted to Christianity by Narcissus, Bishop of Jerusalem, and who afterwards suffered martyrdom; and the Breviary was recognized by Paul V. Afterwards Donatus, who became martyr in the time of Julian for refusing to sacrifice, was substituted in her place. Our reformers devoted it to the NAME OF OUR BLESSED LORD.

10.—SAINT LAWRENCE.

St. Lawrence was, by birth, a Spaniard, and treasurer of the church of Rome, being deacon to Pope Sextus, about the year 259. Soon afterwards, his bishop was killed by the soldiers of Valerian the emperor, with whom our saint would willingly have died. Lawrence refusing to deliver up the church

treasure, which they imagined to be in his custody, he was laid upon a gridiron, and broiled over a fire: this torture he bore with such incredible patience and cheerfulness, that he told his tormentors to turn him round, as he was done enough on one side. His martyrdom was so highly esteemed, that Pulcheria, the empress, erected a temple to his honour, which was afterwards either rebuilt or greatly enlarged by Justinian. In this temple, the gridiron on which he died was deposited with great pomp and solemnity; and, if we may believe St. Gregory, it became famous for abundance of miracles. The celebrated palace of the Escurial is dedicated to this saint. This summer residence of the Spanish court is but a short distance from Madrid. It is a monastery founded by Philip II, in consequence of a vow made on the day of the battle of St. Quentin, which also happened on the festival of St. Lawrence. In Spain it is called by the name of this saint (*San Lorenzo*), and every thing in the Escurial reminds us of the instrument of his martyrdom. It is not only seen upon the doors, windows, altars, rituals, and sacerdotal habits, but the edifice itself bears its form. It is a quadrangular building, with the principal front to the west, behind which is a mountain; the opposite side which faces Madrid takes the form of the shortened handle of a gridiron reversed; and the four feet are represented by the spires of four little square towers which rise above the four angles.

There is nothing magnificent in the architecture of this building; on the contrary, it has rather the serious simplicity suitable to a convent, than the splendid elegance which should announce the residence of a monarch. The front to the west alone has a fine portal formed by large columns of the Doric order, half sunk in the wall, and on each side two great doors of noble dimensions. By this porta we pass to an elegant square court, at the bottom of

which is the church. This principal entrance is never open for the kings of Spain and the princes of the blood, except on two solemn occasions;—when they come for the first time to the Escurial, and when their remains are deposited there in the vault which awaits them; a striking emblem of the gates of life and eternity.

'The front to the south is entirely destitute of ornament; but in its four stories, including the basement, rendered necessary by the inequality of the ground, there are nearly three hundred windows. The two great doors of entrance are on the opposite front. The whole edifice is built of hewn stone of a species of granite, which, by its colour, become brown with time, adds to the austerity of the building. The quarry where it was dug is in the neighbourhood of the Escurial, and it is said that this was one motive for the choice of its site. It furnished blocks of such considerable dimensions, that three stones were sufficient to form the chambranle, or case of the greatest door-ways, and each step of the principal staircase is composed but of one.'—(*Bourgoanne.*)

12.—PRINCE OF WALES BORN.

George, Prince of Wales, was born on the 12th of August, 1762; and married on the 8th of April, 1795, to the Princess Caroline of Brunswick, who was born on the 17th of May, 1768. He has one daughter, Charlotte Augusta, born Jan. 7, 1796. His Royal Highness was appointed REGENT on the 6th of February, 1811.

15.—ASSUMPTION.

This is a festival in the Greek and Romish churches in honour of the supposed miraculous ascension of the Virgin Mary into heaven.

24.—SAINT BARTHOLOMEW.

The word Bartholomew means the son of Tolmai, or Tolomæus, the name of a family among the Jews, mentioned by Josephus. He preached the Gospel in

Armenia, converted the Lycaonians, and afterwards visited India. Some authors assert that he was crucified, like St. Peter, with his head downwards; others, however, with more probability, say that he was flayed alive, by order of Astyages, king of Armenia.

In the year 1662, on this day, two thousand ministers were ejected from their livings, because they would not comply with the Act of Uniformity. The anniversary of Bartholomew is also memorable for the cruel massacre of the Protestants in France, begun on this day in the reign of Charles IX. Some calculate the number of miserable sufferers at *seventy*, others at a *hundred thousand!* In the *Memoirs of the Duke of Sully* (vol. i, p. 33, 34. ed. 1778) there is an interesting narrative of his own escape from this horrid carnage.

'I was in bed (says the Duke), and awaked from sleep, three hours after midnight, by the sound of all the bells, and the confused cries of the populace. My governor St. Julian, with my valet de chambre, went hastily out to know the cause; and I never afterwards heard more of these men, who, without doubt, were among the first that were sacrificed to the public fury. I continued alone in my chamber, dressing myself, when, in a few moments, I saw my landlord enter, pale, and in the utmost consternation: he was of the reformed religion, and, having learned what the matter was, had consented to go to mass, to save his life, and preserve his house from being pillaged. He came to persuade me to do the same, and to take me with him. I did not think proper to follow him, but resolved to try if I could gain the college of Burgundy, where I had studied; though the great distance between the house where I then was and the college made the attempt very dangerous. Having disguised myself in a scholar's gown, I put a large prayer-book under my arm, and went into the street. I was seized with horror inexpressible, at the sight of

the furious murderers; who, running from all parts, forced open the houses, and cried aloud, "kill, kill, massacre the Huguenots:" the blood which I saw shed before my eyes redoubled my terror. I fell into the midst of a body of guards; they stopped me, interrogated me, and were beginning to use me ill, when, happily for me, the book that I carried was perceived, and served me for a passport. Twice after this I fell into the same danger, from which I extricated myself with the same good fortune.

'At last, I arrived at the college of Burgundy, where a danger still greater than any I had yet met with, awaited me. The porter having twice refused me entrance, I continued standing in the midst of the street, at the mercy of the furious murderers, whose numbers increased every moment, and who were evidently seeking for their prey; when it came into my mind to ask for La Faye, the principal of this college, a good man, by whom I was tenderly beloved. The porter, prevailed upon by some small pieces of money which I put into his hand, admitted me; and my friend carried me to his apartment, where two inhuman priests, whom I heard mention Sicilian vespers, wanted to force me from him, that they might cut me in pieces; saying the order was, not to spare even infants at the breast. All the good man could do, was to conduct me privately to a distant chamber, where he locked me up. Here I was confined three days, uncertain of my destiny; and saw no one but a servant of my friend's, who came from time to time to bring me provisions.' The Duke, three days afterwards, left his cell, and the murdering and pillaging were at an end.

28.—SAINT AUGUSTINE.

Augustine was born at Thagaste, a town in Numidia, in the year 354. He early applied himself to the study of polite literature, and became a professor of philosophy and rhetoric, first at Rome, and afterwards at Milan. He next diligently

studied theology, in which he was instructed by St. Ambrose, with whom he contracted an intimate acquaintance. In the year 388, he returned to his native country, and, three years afterwards, was chosen Bishop of Hippo. Augustine was a judicious divine, and the most voluminous writer of all the Fathers. He died in 430, at the age of 77.

29.—JOHN BAPTIST BEHEADED.

This day was formerly denominated *Festum Collectionis Sancti Johannis Baptistæ*, or the Feast of gathering up St. John the Baptist's Relics; but afterwards, by corruption, *Festum Decollationis*, the festival in remembrance of his being beheaded. His nativity is celebrated on the 24th of June, which see.

Astronomical Occurrences.

Miscellaneous Observations respecting the Sun and Moon.

SIR Isaac Newton has shown that the Sun, by its attractive power, retains the planets belonging to our system in their orbits; he has likewise pointed out the method whereby the quantity of matter contained in the Sun may be accurately determined. Dr. Bradley has assigned to light a certain velocity, with a precision exceeding our utmost expectation. Galileo and others have ascertained, by means of the spots on its surface, the rotation of the Sun on its axis, and determined the position of its equator. By means of the transits of Venus over the disk of the Sun in the years 1761 and 1769, mathematicians have calculated its distance from the Earth;—its real diameter and magnitude;—the density of the matter of which it is composed;—and the laws of the fall of heavy bodies on its surface.

In the year 1779, there was a spot on the Sun

which was large enough to be seen with the naked eye: it was divided into two parts, and must have been 50,000 miles in diameter: this and other phenomena of the same kind may be accounted for from some natural change of an atmosphere. For if some of the fluids which enter into its composition be of a shining brilliancy, while others are merely transparent, then any temporary cause which should remove the lucid fluid, will permit us to see the body of the Sun through the transparent ones. An observer on the Moon could see the solid body of the earth only in those places where the transparent fluids of our atmosphere would permit him. In others, the opaque vapours reflect the light of the Sun without permitting his view to penetrate the surface of our globe. He would probably find that our planet had, occasionally, some shining fluids in its atmosphere, such as the Aurora Boreales; and there is good reason to believe that all the planets emit light in some degree; for the illumination which remains on the Moon, in a total eclipse, cannot be entirely ascribed to the light which may reach it by the refraction of the earth's atmosphere.

Dr. Herschel supposes that the spots in the Sun are mountains on its surface, which, considering the great attraction exerted by the Sun upon bodies placed at its surface, and the slow revolution it has about its axis, he thinks may be more than 300 miles in height, and yet stand very firmly. He says that, in 1792, he examined the Sun with several powers from 90 to 500; and it evidently appeared that the black spots are the opaque ground or body of the Sun; and that the luminous part is an atmosphere, which, being intercepted or broken, gives us a glimpse of the Sun itself. Hence he concludes that the Sun has a very extensive atmosphere, which consists of elastic fluids that are more or less lucid and transparent, and of these the lucid ones furnish us with light. This atmosphere he imagines to be somewhere between

1800 and 2780 miles in height; and he supposes that the density of the luminous solar clouds need not be exceedingly more than that of our aurora borealis, in order to produce the effects with which we are acquainted. The Sun, then, appears to be a very eminent, large, and lucid planet, the first and only primary one belonging to our system. Its similarity to the other globes of the solar system, with regard to its solidity; its atmosphere; its surface diversified with mountains and valleys; its rotation on its axis; and the fall of heavy bodies on its surface; lead us to conclude that it is most probably inhabited, like the other planets, by beings whose organs are adapted to the peculiar circumstances of the vast globe.

By analogical reasoning, likewise, we infer that the Moon and planets are the abodes of happiness to indefinite numbers of animated, and, perhaps, rational and intelligent creatures, who may speculate and reason upon our supposed existence as we do of theirs; who may be pursuing scientific knowledge in a way similar to our Newtons, Herschels, and Davys. To take the Moon, for instance; and what is applicable to her may, unquestionably, be inferred of the superior planets, and of their Moons or satellites also.

The Moon is a secondary planet of considerable magnitude; its surface is, as we have seen, diversified, like that of the earth, with hills and valleys. Its situation with respect to the Sun is much like that of the earth; and, by a rotation on its axis, it enjoys an agreeable variety of seasons, and of day and night. To the Moon, our globe would appear a capital satellite, undergoing the same changes of illumination as the Moon does to the earth. The Sun, planets, and the starry constellations of the heavens, will rise and set there as they do here; and heavy bodies will fall on the Moon as they do on the earth. There seems,

then, only to be wanting, in order to complete the analogy, that it should be inhabited like the earth.

It may be objected, that, in the Moon, there are no large seas; and its atmosphere (the existence of which is doubted by many) is extremely rare, and unfit for the purposes of animal life; that its climates, its seasons, and the length of its days and nights, totally differ from ours; that without dense clouds, which the Moon has not, there can be no rain, perhaps no rivers and lakes.

In answer to this it may be observed, that the very difference between the two planets strengthens the argument. We find, even on our own globe, that there is a most striking dissimilarity in the situation of the creatures that live upon it. While man walks on the ground, the birds fly in the air, and the fishes swim in the water. We cannot, surely, object to the conveniences afforded by the Moon, if those that are to inhabit its regions are fitted to their conditions as well as we on this globe of ours. The analogy already mentioned establishes a high probability that the Moon is inhabited. Suppose, then, an inhabitant of the Moon, who has not properly considered such analogical reasonings as might induce him to surmise that our earth is inhabited, were to give it as his opinion, that the use of that great body, which he sees in his neighbourhood, is to carry about his little globe, in order that it may be properly exposed to the light of the Sun, so as to enjoy an agreeable and useful variety of illumination, as well as to give it light by reflection, when direct light cannot be had; should we not condemn his ignorance and want of reflection? The earth, it is true, not only performs those offices which have been named, for the inhabitants of the Moon, but we know that it also affords magnificent dwelling-places to numberless intelligent beings.—From experience, therefore, we affirm, that the performance of the most salutary offices to inferior planets is not inconsistent with the dignity of superior

purposes; and in consequence of such analogical reasonings, assisted by telescopic views, which plainly favour the same opinion, we do not hesitate to infer that the Sun, also, is richly stored with inhabitants.

As usual, we notice the times of the rising and setting of the Sun, which will be as follow:

Monday,	1st,	Sun rises 19 m. past 4.	Sun sets 41 m. past 7
Thursday,	11th,	- - 37 - - 4.	- - 25 - - 7
Sunday,	21st,	- - 53 - - 4.	- - 7 - - 7
Wednesday,	31st,	- - 12 - - 5.	- - 48 - - 6

Equation of Time.—The following table will show what is to be added to the apparent time, marked on the dial, to obtain equal or true time for every 5th day of the month:—

			m.	s.
Monday,	Aug. 1st,	to the time on the dial ADD -	5	58
Saturday,	6th,	- - - - - - - - - - - -	5	34
Thursday,	11th,	- - - - - - - - - - - -	4	56
Tuesday,	16th,	- - - - - - - - - - - -	4	05
Sunday,	21st,	- - - - - - - - - - - -	3	00
Friday,	26th,	- - - - - - - - - - - -	1	43
Wednesday,	31st,	- - - - - - - - - - - -	0	16

The Sun will enter the sign Virgo at 21 minutes after 8 on the 23d day of the month.

We have two full Moons this month, of which the first will be at 51 m. past 7 in the morning of the first day. It enters into its last quarter at 54 m. past 10 in the evening of the 8th. The new Moon or change will occur at 5 m. past 2 on the 15th, which will enter on its first quarter at 46 m. past 6 on the 22d, and the second full Moon will be at 26 m. after 10 on the 30th.

The time of the Moon's rising for the first five days after she is full will be as follows, viz. on the

2d,	- - - - - - - - - 35	m. past 8
3d,	- - - - - - - - - 58	- - - 8
4th,	- - - - - - - - - 20	- - - 9
5th,	- - - - - - - - - 40	- - - 9
6th,	- - - - - - - - - 0	- - - 10

On the 6th day of the month, the Georgian planet will be stationary; but whatever relates to this distant

world can be interesting to those only who are in possession of good glasses. On the 8th, the Moon will eclipse the star marked 2 ξ Ceti: the immersion will occur at 20 minutes past 3 in the morning, and the emersion will be observed at half past 4. In the former case, the star will be 2′½ south of the Moon's centre, and in the latter it will be 7′ on the same side. On the 20th, Mercury will be stationary; and on the 29th, the planet will eclipse the star δ ♒, the star being 9′ south of the planet's centre. The inferior conjunction of Mercury will take place on the 9th, at half past eleven at night. The Georgian planet will be in its quadrature at 7 in the morning of the 22d.

There will be no eclipses of Jupiter's satellites visible this month at Greenwich.

VIEW OF THE SOLAR SYSTEM.

Of Mars.

Mars is of a red fiery colour, and always gives a much duller light than Venus, though, in apparent magnitude, he sometimes equals her. He is not subject to the same limation in his motions as Mercury and Venus, but appears sometimes near the Sun, and sometimes at a greater distance from him; sometimes rising when the Sun sets, and setting when he rises. It is a remarkable circumstance, that, when Mars approaches any of the fixed stars, which all the planets frequently do, these stars change their colour, grow dim, and often become totally invisible, though at but a little distance from the body of the planet. He appears to move from west to east round the earth, and the mean duration of his sidereal revolution is 687 days. When we begin to perceive this planet in the morning, his motion is direct, and the most rapid possible. This velocity diminishes gradually, and the motion ceases altogether when the planet is about 137° distant from the Sun; then his motion becomes

retrograde, and increases in rapidity till he comes into opposition with the Sun. It then gradually diminishes again, and becomes nothing when Mars approaches within 137° of the Sun. Then the motion becomes direct, after having been retrograde for 73 days, during which interval the planet described an arch of about 16°. Continuing to approach the Sun, the planet is lost, in the evening, in the rays of that luminary. All these different phenomena are renewed after every opposition of Mars; but there are considerable differences both in the extent and duration of his retrogradations.

A spectator in Mars will see Venus about the same distance from the Sun as Mercury appears to us, and the earth, to him, will seem as large as Venus appears to us, and never more than 48° from the Sun: and when the earth is found in conjunction with and very near the Sun, he will see the earth appear horned, or falcated, and its attendant the Moon of the same figure, and, at its utmost distance from the earth, not above 15 m. of a degree, though they are 240,000 miles asunder. Mars being not more than a fifth part as large as the earth, if any Moon attends him, she must be very small, and it has not yet been discovered by the best telescopes of our most illustrious astronomers.

The telescopic appearance of Mars is very variable; but the predominant brightness of the polar regions leads to the supposition that its poles, like those of the earth, are covered with an everlasting snow; and Dr. Herschel imagines that the changes in brightness are connected with the summer and winter seasons on that planet. This astronomer published, in vol. lxxiv of the Transactions of the Royal Society, an account of a very laborious investigation of all the circumstances relating to the telescopic phenomena of this planet, and concludes by giving the following results:—

(1) The axis of Mars is inclined to the ecliptic in an angle of 59° 42′.

(2) The obliquity of the ecliptic on the globe of Mars is 28° 42′.

(3) The figure of Mars is an oblate spheroid whose equatorial diameter is to the polar one as 1355 to 1272, or as 16 to 15 nearly.

(4) The equatorial diameter of Mars, reduced to the mean distance of the earth from the Sun, is little more than 9″.

(5) This planet has a considerable atmosphere, so that its inhabitants probably enjoy a situation in many respects similar to ours.

The disk of Mars changes its form, and becomes sensibly oval according to the relative position of the Sun. These phases show that it is from the Sun it receives its light. From the observation of spots distinctly seen on its surface, it is inferred that it moves on its axis from west to east in a period of little more than 24 hours. The mean diameter is about 4000 miles, or rather more than half that of the earth. Its mean distance from the Sun is about 145,000,000 miles. Its proportion of light is to that enjoyed by the earth as 43 to 100.

In the acronical rising of this planet, that is, when it is in opposition to the Sun, it is found to be five times nearer to us than when in conjunction with him; and, therefore, he appears so much bigger and brighter at one time than another. Mars, having his light from the Sun, and revolving round it, has an increase and decrease like the Moon. It may also be observed almost bisected, when in its quadratures with the Sun, but is never seen horned as the inferior planets; which shows that his orbit includes the earth's within it, and that he shines not by his own light.—The phases of Mars were first discovered by Galileo.

The Naturalist's Diary.

Now jocund Summer, with her honied breath,
Sweetening the golden grain and blithesome gale,
Displays her sun-burnt-face
Beneath her hat of straw.

THE powerful influence of the solar rays now contributes to ripen the various sorts of grain, which are benevolently given for the food of man and cattle. Fine weather is very desirable, that the principal source of the farmer's wealth may be safely housed; for sudden storms beat down the nearly ripe corn, and materially injure it. The time of commencing the harvest varies greatly in different districts. It is usually begun in the southern and midland parts of the kingdom towards the end of July, but principally at the beginning of this month: in the northern districts of Scotland, the harvest does not commence until the first or second week in September; and it is but rarely that, in these parts of England, it is finished, even in the most favourable situations, before the end of October; and not unfrequently this time is protracted till the middle of November.

The manner of taking the harvest is not more various than the periods at which it begins. In some cases, it is the custom to reap or cut the corn with a sickle, and bind it up into sheaves of a moderate size; in others, the cutting of the grain is executed by the *scythe* in some particular method, and often left, without being bound up, or bound into a sort of bundles. A toothed sickle is employed by some farmers; while others use a sickle with a cutting edge. The grain, when reaped or mown, is, in some counties, set up into a sort of *hattock*, and capped or covered with sheaves of the same; but, in others, the practice is widely different. Some cut the grain high, so as to

leave a rough stubble; while others cut it quite close to the land. In Surrey and Kent, *women* may be seen wielding the sickle. Rye and oats usually become ripe first; but this depends upon the time of sowing, though grain of every species may, sometimes, be seen at once, fit for the sickle.

The utmost diligence is now exerted, and labourers from all parts are eagerly engaged to give their assistance in this delightful occupation; all is bustle and activity. The labours of the sickle completed, those who have toiled in securing the wealth of their employer, now receive the welcome reward of a Harvest Supper, or festival. Many curious ceremonies were formerly practised by rustics at the celebration of Harvest Home. Images made of straw, or stubble, were carried home from the harvest-field, followed by a piper or a drum, the men and women singing round it. Some sixty years ago, in the north, a figure like this was dressed up, at harvest time, and was called the *kern-baby*. In the Hebrides, the strokes of the sickle are timed by the modulation of the harvest song, in which all the voices of the reapers are united. Herrick, in his *Hesperides*, gives a lively description of this festival, in his *Hock-cart*, or Harvest Home:

Come, sons of Summer, by whose toile
We are the lords of wine and oile,
By whose tough labours, and rough hands,
We rip up first, then reap our lands,
Crowned with the eares of corne, now come,
And to the pipe sing Harvest home.
Come forth, my lord, and see the cart,
Drest up with all the country art.
See here a maukin, there a sheet
As spotlesse pure as it is sweet:
The horses, mares, and frisking fillies,
(Clad, all, in linnen, white as lillies,)
The harvest swaines and wenches bound
For joy, to see the hock-cart crowned.
About the cart, heare, how the rout
Of rural younglings raise the shout;
Pressing before, some coming after,
Those with a shout, and these with laughter.

Some blesse the cart; some kisse the sheaves;
Some prank them up with oaken leaves:
Some crosse the fill-horse; some, with great
Devotion, stroak the home-borne wheat:
While other rusticks, less attent
To prayers than to merryment,
Run after with their garments rent.
Well on, brave boyes, to your lord's hearth
Glitt'ring with fire; where, for your mirth,
You shall see, first, the large and cheefe
Foundation of your feast—fat beefe;
With upper stories, mutton, veale,
And bacon, (which makes full the meale)
With sev'rall dishes standing by,
And here a custard, there a pie,
And here all-tempting Frumentie.

About the 11th of August, the *Puffin (alca arctica)* migrates. Priestholme, or Puffin's Island, about three quarters of a mile from the Isle of Anglesea, abounds with these birds; and their flocks, for multitude, may be compared to swarms of bees. 'After climbing up the rocks, and walking to the other side of the island, I had a sight,' says Mr. Bingley, 'of upwards of fifty acres of land literally covered with puffins; and my calculation is much within compass, when I declare that the numbers here must have been more than 50,000. Their bite, from the shape and strength of the bill, is severe: in the birds full grown, it has four oblique transverse furrows, and, when caught, they will seize on any thing that is near them. Puffins are migratory, first arrive from the 5th to the 10th of April, quit it (almost to a bird), and return twice or thrice before they settle to burrow and prepare for laying their eggs. They begin to burrow the first week in May, and are at that time so intent on the business as to suffer themselves to be taken by the hand. This task falls chiefly to the share of the males, for, on dissection, ten out of twelve so employed, proved of that sex; the males also insist in incubation. The first young are hatched the beginning of July, and the old birds show much

affection towards them, but this affection ceases at the period of migration, which is about the 11th of August[1]. Puffins do not breed till three years old, lay only one egg, which differs much in form; some have one end very acute, others being completely obtuse; all are white. The young are entirely covered with a long blackish down, and in shape altogether so different from the parents, that no one, at first sight, could suppose them the same species. Puffins are said to change their bills annually. Their usual food is sprats and sea-weeds, which renders the flesh of the old ones extremely rank: the young, however, are sold by the renters of the island (who hire it from Lord Bulkeley at *fifteen pounds* per annum) at one shilling per dozen, to persons who cure them by pickling, and, when packed in small barrels, each containing twelve birds, sells for four or five shillings. The oil is extracted from them by a peculiar process, and the bones are taken out; after which the skin is closed round the flesh, and they are immersed in vinegar impregnated with spices. Dr. Caius informs us, that, in his days, puffins were allowed by the church to be eaten in Lent, instead of fish; and says, that they were usually caught by means of ferrets, as rabbits are sometimes taken: at present, they are either dug out of the burrows, seized by the hand, or drawn out by a hooked stick. The winter residence of this genus, and that of the guillemot, is but imperfectly known; it is probable that they live at sea in some more temperate climate, remote from land; forming those myriads of birds mariners observe in many parts of the ocean. They are always

[1] We have visited Priestholme a week after this period, and have not seen a single puffin; so much punctuality is observed in their annual migrations. Of the many thousand birds which cover the island, not one is left: sometimes, indeed, a single bird is discovered which was prevented by age or accident from accompanying this great army of winged wanderers.

found there at certain seasons, retiring only at breeding time, and, during that period, are met with as near the pole as ever navigators have penetrated.'

About the middle of the month, the swift disappears, and probably migrates to more southern regions. Rooks begin to roost in their nest trees, and young broods of goldfinches *(fringilla carduelis)* appear; lapwings *(tringa vanellus)* and linnets *(fringilla linota)* congregate: the nuthatch chatters; and, towards the end of the month, the redbreast is again heard.

At the beginning of the month, melilot (*trifolium officinale*), rue *(ruta graveolens)*, the water parsnep *(sysimbrium nasturtium)*, horehound *(marrubium vulgare)*, water mint *(mentha aquatica)*, the orpine *(sedum telephium)*, and the gentiana amarella, have their flowers full blown. The purple blossoms of the meadow saffron (*colchicum autumnale*) now adorn the low moist lands. The number of plants in flower, however, is greatly lessened in this month, those which bloomed in the former months running fast to seed.

'The great intention of nature in the structure of plants, seems to be the perfecting of the seed; for those parts which most immediately contribute to fructification are usually lodged in the centre, the recesses, or the labyrinths of the flowers. During their tender and immature state, they are shut up in the stalk, or sheltered in the bud. But as soon as they have acquired firmness of texture sufficient to bear exposure, and are ready to perform the important office which is assigned to them, they are disclosed to the light and air by the bursting of the stem, or the expansion of the petals; after which they have, in many cases, by the very form of the flower during its blow, the light and warmth reflected upon them from the concave side of the cup. What is called also the sleep of plants, is the leaves or petals disposing themselves in such a manner as to shelter the young stem,

buds or fruits; they turn up or they fall down, according as this purpose renders either change of position requisite.' The scarcity of flowers is amply repaid by an abundance of fruits of various kinds and hues:—

> The mealy *plum*
> Hangs purpling, or displays an amber hue;
> The luscious *fig*, the tempting *pear*, the *vine*,
> Perchance, that in the noontide eye of light
> Basks glad in rich festoons. The downy *peach*
> Blushing like youthful cheeks; the *nectarine* full
> Of lavish juice.— BIDLAKE.

Heaths and commons are now in all their beauty; the flowers of the various species of heath *(erica)* covering them with a fine purple hue. Ferns also begin to flower, the commonest sort of which is the fern or brakes *(polypodium filix-mas)*; but the female (*pteris aquilina*) is the most beautiful plant. How admirable is the disposition of these heaths! While the warm valley, on the one hand, which enjoys the fertilizing influence of a placid stream, and of a powerful sun, is too rich a soil for this plant; the higher summit of the mountain is, on the other hand, too cold, too barren, and too much exposed, to be the favourite soil or climate of heaths. Fungous moss, the most barren of all plants, and the least capable of affording nourishment to cattle, occupies these summits. The heath grows midway up the hill, while the skirts and the valleys below are destined for grass and corn. Thus, the very covering given to the mountains demonstrates the benignity of Providence: what is nearest to the habitation of man, is best adapted to his support; what is nearest and most accessible to his cattle, affords them most nourishment; and the least productive part of his ground is removed to the greatest distance.

Various are the uses to which heath and fern are applied. In England, the common heath is employed in making brooms or faggots, which last are used as fuel in ovens; the stalks and tops are of consider-

able service in tanning leather. Horses, sheep, and goats, eat the tender shoots of heath. *Fern* makes an excellent thatch; it also produces good litter for horses and cows; and, when dry, is eaten by cattle, particularly by hogs, who are very fond of this plant. It is also a substitute for coal; and its ashes produce a tolerably pure alkali for the glass-manufacturers; these are much used in France.

Insects still continue to swarm; they sport in the sun from flower to flower, from fruit to fruit, and subsist themselves upon the superfluities of nature. Some of the most splendid butterflies are seen in August. The *papilio Machaon*, commonly known as the swallow-tailed butterfly, is of a beautiful yellow, with black spots or patches along the upper edge of the superior wings: all the wings are bordered with a deep edging of black, decorated by a double row of crescent-shaped spots, of which the upper row is blue, and the lower yellow. The under wings are tailed, and are marked at the inner angle or tip with a round red spot, bordered with blue and black. Three others are particularly worthy of notice: (1) The *peacock butterfly (Papilio Io)*, of an orange brown colour, with black bars intersected by spaces of yellow; (2) the *admirable butterfly* (*Papilio Atalanta*), of the most intense velvet black colour, with a rich carmine-coloured bar across the upper wings, which are spotted towards the tips with white; and (3) the *papilio paphia*, an highly elegant insect of a fine orange chesnut colour above, with numerous black spots and bars. It is usually found in the neighbourhood of woods. To these may be added, the black-eyed marble butterfly (*papilio semele*), and the small golden black spotted butterfly (*papilio philæas*).

The powder or down on the wings of the *lepidoptera*, or scaly-winged insects, is composed of very minute *scales*, which differ in size and form in the dif-

ferent species. These were formerly supposed to be *feathers*.

Lord Byron, availing himself of the evanescent and fragile splendour of the butterfly, has produced the following beautiful simile:

As rising on its purple wing
The insect queen[1] of eastern spring,
O'er emerald meadows of Kashmeer
Invites the young pursuer near,
And leads him on from flow'r to flow'r
A weary chase and wasted hour,
Then leaves him, as it soars on high,
With panting heart and tearful eye:
So Beauty lures the full-grown child
With hue as bright, and wing as wild;
A chase of idle hopes and fears,
Begun in folly, closed in tears.
If won, to equal ills betrayed,
Woe waits the insect and the maid;
A life of pain, the loss of peace,
From infant's play and man's caprice:
The lovely toy, so fiercely sought,
Has lost its charm by being caught;
For every touch that wooed its stay
Has brushed its brightest hues away,
Till charm, and hue, and beauty gone,
'Tis left to fly or fall alone.
With wounded wing, or bleeding breast,
Ah! where shall either victim rest?
Can this with faded pinion soar
From rose to tulip as before?
Or Beauty, blighted in an hour,
Find joy within her broken bow'r?
No! gayer insects flutt'ring by
Ne'er droop the wing o'er those that die,
And lovelier things have mercy shown
To ev'ry failing but their own;
And ev'ry woe a tear can claim,
Except an erring sister's shame.

Flies now abound in the windows: the apis manicata, or solitary bee, and the white moth (*phalæna*

[1] The blue-winged butterfly of Kashmeer, the most rare and beautiful of the species.

pacta) are observed. The ptinus pectinicornis also makes its appearance in this month. The larvæ of this insect are very destructive to wooden furniture, boring holes in tables, chairs, bed-posts, &c.;—they are much inclined to deposit their eggs in beech, hence this wood is less fit for the manufacture of domestic utensils.

The southern counties of England, particularly Surrey and Kent, now yield their valuable produce of *hops* in this month. The common hop (*humulus lupulus*) is propagated either by nursery plants, or by cuttings. These are set in *hills*, formed by digging holes in the spring, which are filled with fine mould, and the number of which varies from 800 to 1000, or 1200 per acre. One, two, or three plants are put in each hill; but, if hops are designed to be raised from cuttings, four or five of these, from three to four inches in length, are planted and covered one inch deep with fine mould.

At the end of the first year, it becomes necessary to put poles into the hills, round which the bines reared from plants are wound: at the expiration of the second year, full-sized poles from 15 to 20 feet are set (though the hop-bines will run to the height of 50 feet), in the proportion of two poles to each hill, and a similar number of hop plants are fastened loosely round each pole, by means of withered rushes. Hops begin to flower about the latter end of June or the beginning of July. The poles are now entirely covered with verdure, and the pendent flowers appear in clusters and light festoons. The hops, which are the scaly seed-vessels of the female plants, are, when the seed is formed (generally about the end of August), picked off by women and children: for this purpose, the poles are taken up with the plants clinging to them. The seeds are then dried over a charcoal fire, exposed to the air for a few days, and packed in sacks and sent to market.

The culture of hops, though profitable when it succeeds, is very precarious: as soon as the plant appears above ground, it is attacked by an insect somewhat similar to the turnip-fly, which devours the young heads. Hop-gardens, situated on chalky soils, are peculiarly subject to its depredations. In the months of June and July, the hops are liable to be *blown* by a species of *aphis*, or fly. This insect, however, does not endanger the growth of the plant, unless it be in a weak state, in consequence of the depredations committed on its root by the larvæ of the ottermoth *(phalæna humuli)*.

The hop is a most valuable plant: in its wild state it is relished by cows, horses, goats, sheep, and swine. When cultivated, its young tops are eaten, early in the spring, as substitutes for asparagus, being wholesome and aperient. Its principal use, however, is in brewing malt liquors, communicating that fine bitter flavour to our beer, and making it keep for a longer time than it otherwise would do. Hops also serve some important purposes in medicine.

Towards the end of the month, the wild orach *(chenopodium album)*, the wild clary *(salvia verbenaca)*, the sweet gale *(myrica gale)*, the golden rod *(senecio paludosus)*, the milk-thistle *(carduus marianus)*, and ladies-traces *(ophrys spiralis)*, have their flowers in full bloom.

Several *maritime* plants flower this month;—glasswort *(salicornia herbacea)*, and grass-wrack *(zostera marina)*, on sea coasts; the samphire *(crithmum maritimum)*, and the *asparagus officinalis*, among *rocks*. On *sandy shores* may be seen the sea campion or catchfly *(silene maritima)*, sea spurge *(euphorbia paralia)*, and lavender cotton *(santolina maritima)*. On *sea shores* are found the sea-stock *(cheiranthus sinuatus)*, and sea wormwood *(artemisia maritima.)*

September.

THIS word is composed of *septem* seven, and the termination *ber*, like *lis* in *Aprilis*, *Quintilis*, *Sextilis*. This rule will also apply to the three following months, Octo-ber, Novem-ber, Decem-ber. Such is the opinion of an acute modern critic, *Gerard John Vossius*; and we prefer it to the derivation of *Priscian* and *Isidorus*, who consider September to be composed of *septem*, and *imber*, a shower of rain; this month being the commencement of the rainy season. PEACHAM (p. 420) describes September, 'with a merry and cheerful countenance, in a purple robe; upon his head a wreath of white and purple grapes: in his left hand a handful of millet oates, and panicle, withal carrying a *cornucopia* of ripe peaches, peares, pomgranates, and other fruits of his season; in his right hand, the sign *Libra*. His purple robe sheweth how he raigneth like a king above other moneths, abounding with plenty of things necessary for man's life. The sign *Libra* is

now (as Sir Peter Sidney saith) an indifferent arbiter between the day and night, poizing to each his equal hours, according to *Virgil*:—

'Libra dies, somnique pares ubi fecerit horas.'

'September they called *Gerst-monat*, for that barley which that moneth commonly yeelded was antiently called gerst, the name of barley being given unto it by reason of the drinke therewith made, called beere, and from *beerlegh* it come to be berlegh, and from berlegh to barley. So in like manner *beere-heym*, to wit, the overdecking or covering of *beere*, came to be called *berham*, and afterwards *barme*, having since gotten I wot not how many names besides.

'This excellent and healthsome liquor, beere, antiently also called *ael*, as of the Danes it yet is (beere and ale being in effect all one), was first of the Germans invented, and brought in use.'—(*Verstegan*, p. 61.)

Remarkable Days.

1.—SAINT GILES.

GILES, or Ægidius, was born at Athens; but, after he had disposed of his patrimony in charitable uses, came to France in the year 715. He lived two years with Cæsarius, Bishop of Arles, and afterwards retired into solitude. Charles Martel, when hunting, found him in his hermit's cell, and, pleased with his unaffected piety and sanctity of manners, erected an abbey for him at Nismes, of which he was constituted abbot. He died in the year 795.

2.—LONDON BURNT.

The fire of London broke out on Sunday morning, September 2, 1666, O. S.; and, being impelled by strong winds, raged with irresistible fury nearly four days and nights; nor was it entirely mastered till the fifth morning after it began. This most

destructive conflagration commenced at the house of one Farryner, a baker, in Pudding-lane, near [New] Fish-street Hill, and within ten houses of Thames-street, into which it spread within a few hours; nearly the whole of the contiguous buildings being of timber, lath, and plaster, and the whole neighbourhood presenting little else than closely confined passages and narrow alleys. The fire quickly spread, and was not to be conquered by any human means. 'Then, (says a contemporary writer) then the city did shake indeed; and the inhabitants did tremble, and flew away in great amazement from their houses, lest the flames should devour them: *rattle, rattle, rattle,* was the noise which the fire struck upon the ear round about, as if there had been a thousand iron chariots beating upon the stones:—you might see the houses *tumble, tumble, tumble,* from one end of the street to the other, with a great crash, leaving the foundations open to the view of the heavens[1].'

The destructive fury of this conflagration was never, perhaps, exceeded in any part of the world, by any fire originating in accident. *Within the walls,* it consumed almost five-sixths of the whole city; and *without* the walls it cleared a space nearly as extensive as the one-sixth part left unburnt within. Scarcely a single building that came within the range of the flames was left standing. Public buildings, churches, and dwelling-houses, were alike involved in one common fate.

In the summary account of this vast devastation, given in one of the inscriptions on the Monument, and which was drawn up from the reports of the

[1] The progress of the fire might have been stopped, but for the foolish conduct of the LORD MAYOR, who refused to give orders for pulling down some houses, *without the consent of the owners.* Buckets and engines were of no use, from the confined state of the streets.

surveyors appointed after the fire, it is stated, that 'The ruins of the city were 436 acres [viz. 333 acres within the walls, and 63 in the liberties of the city]; that, of the six and twenty wards, it utterly destroyed fifteen, and left eight others shattered, and half burnt; and that it consumed 400 streets, 13,200 dwelling-houses, eighty-nine churches [besides chapels; four of]; the city gates, Guildhall, many public structures, hospitals, schools, libraries, and a vast number of stately edifices.' The immense property destroyed in this dreadful time cannot be estimated at less than *ten millions* sterling. Amid all the confusion and multiplied dangers that arose from the fire, it does not appear that more than SIX persons lost their lives. Calamitous as were the immediate consequences of this dreadful fire, its *remote effects* have proved an incalculable blessing to subsequent generations. To this conflagration may be attributed the complete destruction of the PLAGUE, which, the year before only, swept off 68,590 persons!! To this tremendous fire we owe most of our grand public structures—the regularity and beauty of our streets—and, finally, the great salubrity and extreme cleanliness of a large part of the city of London.

7.—SAINT EUNERCHUS.

Eunerchus, or Evortius, was bishop of Orleans, and present at the council of Valentia, A.D. 375. The circumstances of his election to this see were considered as maraculous, and principally ascribed to a dove which alighted upon his head in consequence of the prayers of the electors. Other wonderful effects of his own prayers are attributed to him; such as extinguishing fire in the city almost instantaneously; finding a large pot of gold, which had long lain concealed under the ruins of a church, and which proved nearly sufficient to defray the expenses of rebuilding it; the conversion of 7000 infidels in the space of three days only; and lastly, foretelling, not only

the time of his own death, but nominating a successor in the person of Arianus.

8.—NATIVITY OF THE VIRGIN MARY.

A concert of angels having been heard in the air to solemnize this important event, the festival was appointed by Pope Servius about the year 695. Innocent IV honoured this feast with an octave in 1244; and Gregory XI, about the year 1370, with a vigil.

14.—HOLY CROSS.

This festival was first observed in the year 615, on the following occasion: Cosroes, King of Persia, having plundered Jerusalem, carried away large pieces of the cross which had been left there by the Empress Helena. *Heraclius*, the emperor, soon afterwards engaged and defeated him, and recovered the cross; but bringing it back in triumph to Jerusalem, he found the gates shut against him, and heard a voice from heaven, saying, that the *King of Kings* did not enter into that city in so stately a manner, but *meek and lowly, and riding upon an ass.* The emperor then immediately dismounted from his horse, and walked through the city barefooted, carrying the cross himself. The *holy-rood*, or cross, when perfectly made, had not only the image of our Saviour extended upon it, but the figures of the Virgin Mary and St. John, one on each side; in allusion to John xix, 26,—'*Christ on the Cross saw his mother and the disciple whom he loved standing by.*'

Such was the representation denominated the rood, usually placed over the screen which divided the nave from the chancel of our churches. To our ancestors, we are told, it conveyed a full type of the Christian church; the nave representing the church militant, and the chancel the church triumphant; denoting that all who would go from the one to the other, must pass under the rood; that is, carry the Cross, and suffer affliction.

17.—SAINT LAMBERT.

Lambert was bishop of Utrecht, in the time of King Pepin I. But, reproving the king's grandson for his irregularities, he was cruelly murdered at the instigation of an abandoned woman. Being canonized, he obtained at first only a simple commemoration in the calendar; but Robert, Bishop of Leeds, in a general chapter of the Cistercian Order, procured a solemn feast to his honour in the church in 1240.

21.—SAINT MATTHEW.

Matthew, called also Levi, was a Galilean, the son of Alpheus and Mary; and a publican or tax-gatherer under the Romans. Our Lord having healed a paralytic, retired out of Capernaum to walk by the seaside, teaching the people; here he saw Matthew sitting at the receipt of customs, whom he called to come and follow him. Though Matthew was rich, he left all for this purpose.

After his election to the apostleship, he continued with the rest till our Saviour's ascension; and then, for the first eight years, preached in Judea. About this time (64 or 65) he wrote his Gospel in Hebrew, which was afterwards translated into Greek: after many labours and miracles, he closed his life at Nadabar in Ethiopia, probably by martyrdom.

22.—CORONATION OF KING GEORGE III.

His present Majesty was crowned on the 22d of September, 1761. The form of the oath, and the manner of taking it, we copy from 'An Account of the Ceremonies observed in the Coronations of King James II, and his royal consort; King William III and Queen Mary; Queen Anne; King George I; and King George II, and Queen Caroline: 4to. London, 1760.'

Sermon being ended, the king uncovers his head, and the archbishop repairs to his majesty, and asks him, *Sir, are you willing to take the Oath usually taken by your Predecessor?*

And the king answers, *I am willing.*

Then the archbishop ministers these questions; to which the king (having a book in his hand) answers as followeth.

Archb. *Sir, Will you grant and keep, and by your Oath confirm to the People of* England, *the Laws and Customs to them granted by the Kings of* England, *your lawful and religious Predecessors; and namely, the Laws, Customs, and Franchises granted to the Clergy by the glorious King* St. Edward, *your Predecessor, according to the Laws of God, the true Profession of the Gospel established in this Kingdom, and agreeing to the Prerogative of the Kings thereof, and to the antient Customs of this Realm?*

King. *I grant and promise to keep them.*

Archb. *Sir, Will you keep Peace and Godly Agreement entirely, according to your Power, to the holy Church, the Clergy, and the People?*

King. *I will keep it.*

Archb. *Sir, Will you, to your Power, cause Law, Justice, and Discretion, in Mercy and Truth, to be executed in all your Judgments?*

King. *I will.*

Archb. *Sir, Will you grant to hold and keep the rightful Customs which the Commonalty of this your Kingdom have? and will you defend and uphold them to the Honour of God, so much as in you lieth?*

King. *I grant and promise so to do.*

Then the Petition or request of the Bishops to the King is read by one of the sacred Order with a clear voice, in the name of the rest standing by; *Our Lord and King, We beseech you to pardon us, and to grant and preserve unto us, and the Churches committed to our Charge, all Canonical Privileges, and due Law and Justice; and that you will protect and defend us, as every good King in his Kingdom ought to be Protector and Defender of the Bishops and Churches under their Government.*

The King answers, *With a willing and devout*

Heart, I promise and grant you my Pardon; and that I will preserve and maintain to you, and the Churches committed to your Charge, all Canonical Privileges, and due Law and Justice: And that I will be your Protector and Defender to my Power, by the assistance of God, as every good King in his Kingdom ought in Right to protect and defend the Bishops and Churches under their Government.

Then the king rises from his chair, and being attended by the Lord Great Chamberlain, and supported by the two Bishops, and the Sword of State carried before him, he goes to the Altar, and, laying his hand upon the Evangelists, takes the Oath following; *The Things which I have here before promised I will perform and keep: So help me God, and the Contents of this Book.* He then kisses the Book.

26.—OLD HOLY ROOD. *See* HOLY CROSS, p. 227.

26.—SAINT CYPRIAN.

He was an African by birth, of a good family and well educated. Before his conversion he taught rhetoric; but by the persuasion of Cæcilius, a priest, he became a Christian. He gave all his property to the poor; and was elected bishop of Carthage, A.D. 248. He behaved with great courage and resolution in the *Decian* persecution, and openly invited the people to constancy and perseverance: this conduct so enraged the Pagans, that he soon fell a victim to their fury, and suffered martyrdom under Valerianus and Gallienus, in 258.

This Cyprian, however, is not the same saint now commemorated on this day in the Romish calendar, but another Cyprian of Antioch, who from being a necromancer became a Christian, and afterwards a deacon and martyr. Being smitten with a beautiful young Christian, he applied to Satanic influence, to enable him to accomplish his desires;—but this power having ingenuously confessed that he had no control over a Christian, Cyprian embraced the

same faith. As soon, however, as this tale was known, both he and *Justina* were accused before the Heathen governor, who, to make them renounce Christianity, condemned them to be fried together in a large pan, with pitch and fat. After their tortures, they were beheaded, and their bodies thrown away unburied, until a kind mariner took them up and conveyed them to Rome, where their remains were deposited in the church of Constantine. They suffered in the year 272.

29.—SAINT MICHAEL.

Saint Michael was an archangel who presided over the Jewish nation, and had an army of angels under his command and conduct; he fought also with the Dragon or Satan, and his angels; and, contending with the Devil, he disputed about the body of Moses. See *Rev.* xii, 7; *Jude* 9. This festival has been kept with great solemnity ever since the sixth century. It was enacted in the ecclesiastical laws of King Ethelred in England, in the year 1014, 'That every Christian who is of age fast three days on bread and water, and raw herbs, before the feast of St. Michael, and let every man go to confession and to church barefoot—let every priest with his people go in procession three days barefoot, and let every one's commons for three days be prepared without any thing of flesh, as if they themselves were to eat it, both in meat and drink, and let all this be distributed to the poor. Let every servant be excused from labour these three days, that he may the better perform his fast, or let him work what he will for himself. These are the three days, Monday, Tuesday, and Wednesday, next before the feast of St. Michael. If any servant break his fast, *let him make satisfaction with his hide* (bodily stripes); let the poor freeman pay thirty pence, the king's thane a hundred and thirty shillings; and let the money be divided to the poor.'

There is an old custom, still in use, of having a

roast goose for dinner on Michaelmas day; and it is a popular saying, 'that, if you eat goose on Michaelmas day, you will never want money all the year round.' In the 'British Apollo' the proverb is thus discussed:

Q. Supposing now Apollo's sons
Just rose from picking of goose bones,
This on you pops, pray tell me whence
The customed proverb did commence,
That who eats goose on Michael's Day,
Shan't money lack his debts to pay.

A. This notion, framed in days of yore,
Is grounded on a prudent score;
For, doubtless, 'twas at first designed
To make the people *seasons* mind;
That so they might apply their care
To all those things which needful were,
And, by a good industrious hand,
Know *when* and *how* t' improve their land.

About this time of the year, it has been, and still continues, the custom to elect the governors of towns and cities. The following ceremonies are observed by the SHERIFFS OF LONDON, when they take their oaths at Westminster. On the day after Michaelmas day, or, if that day fall on Sunday, on the Monday following, the Lord Mayor and Aldermen proceed from Guildhall, and the two Sheriffs, with their respective companies, from their particular hall; and, having embarked on the Thames, his lordship in the city barge, and the sheriffs in the company's barge, they go, in aquatic state, to Palace Yard. They then proceed to the Court of Exchequer; where, after the usual salutations to the bench (the cursitor baron presiding), the recorder presents the two sheriffs; the several writs are then read, and the sheriffs and the senior under-sheriff take the usual oaths. *The ceremony on this occasion, in the Court of Exchequer, which vulgar error supposes to be an unmeaning farce, is solemn and impressive; nor have the new sheriffs the least connexion either with chopping of sticks, or counting of hobnails. The tenants of a manor in Shropshire are directed to come forth to do their suit*

and service: on which the senior alderman below the chair steps forward, and chops a single stick, in token of its having been customary for the tenants of that manor to supply their lord with fuel. The owners of a forge in the parish of St. Clement (which formerly belonged to the city, and stood in the high road from the Temple to Westminster, but now no longer exists) are then called forth to do their suit and service; when an officer of the court, in the presence of the senior alderman, produces 6 horse shoes and 61 hobnails, which he counts over in form before the cursitor baron, who, on this particular occasion, is the immediate representatve of the sovereign. The whole of the numerous company then embark in their barges, and return to Blackfriars' Bridge, where the state carriages are in waiting. Hence they proceed to the company's hall, and partake of an elegant dinner.—(See *Gent. Mag.*, vol. lxxiv, p. 965.)

On the election of a *bailiff* at *Kidderminster*, the inhabitants assemble in the principal streets *to throw cabbage stalks at each other*. The town-house bell gives signal for the affray. This is called lawless hour. This done (for it lasts an hour), the bailiff elect and corporation in their robes, preceded by drums and fifes (for they have no waits), visit the old and new bailiff, constables, &c. &c. attended by the mob. In the mean time, the most respectable families in the neighbourhood are invited to meet and fling apples at them on their entrance. More than forty pots of apples have been expended at one house.—(*Gent. Mag.* for 1790, vol. lx, part 2, p. 119.)

30.—SAINT JEROME.

Jerome was born in a town called Stridon, on the confines of Pannonia and Dalmatia. His father's name was Eusebius. Being a youth of good abilities, he was sent to Rome, where he studied rhetoric, &c. under Donatus and Victorinus, two celebrated Latin critics; and was employed as secretary to Pope *Camasus*, and afterwards baptized. He now de-

voted his time to the study of divinity, with those celebrated theologists, Gregory Nazianzen, Epiphanius, and Didymus. To complete his studies, he applied himself very closely to the Hebrew language, in which he was instructed by the celebrated Barraban, a Jewish Rabbi, and spent most of his time afterwards in a monastery at Bethlehem. In this solitary retirement he translated the Old Testament into Latin; the same version now styled the *Vulgate*, and the only one used or allowed by the Romish church. He died in the eightieth year of his age, A.D. 422.

Astronomical Occurrences.

On the Nature and Position of the fixed Stars.

We shall, in this paper, detail some of the theories of Mr. Michell and Dr. Herschel concerning the nature and position of the fixed stars. 'The great number of stars,' says Mr. Michell, 'that have been discovered to be double, triple, &c. by Mr. (now Dr.) Herschel, if we apply the doctrine of chances, as I have heretofore done, in my inquiry into the probable parallax, &c. of the fixed stars, published in the Philosophical Transactions for the Year 1767, cannot leave a doubt, with any one who is properly acquainted with the force of these arguments, that by far the greatest part, if not all of them, are systems of stars so near each other, as probably to be liable to be affected sensibly by their mutual gravitation; and it is therefore not unlikely that the periods of the revolutions of some of these about their principal, the smaller ones being, upon this hypothesis, to be considered as satellites to the other, may some time or other be discovered.' Having then shown in what manner the magnitude of a fixed star, if its density were known, would affect the velocity of its light, he concludes, that if the semidiameter of a sphere of the same density with the Sun were to exceed his in the proportion of 500 to 1, a body falling from an infinite

height towards it, or moving in a parabolic curve at its surface, would have acquired a greater velocity than that of light; and consequently, supposing light to be attracted by the same force, in proportion to its vis inertiæ with other bodies, all light emitted from such a body would be made to return towards it by its own proper gravity. But if the semidiameter of a sphere of the same density with the Sun was of any other size less than 497 times that of the Sun, though the velocity of light emitted by such a body would never be wholly destroyed, yet it would always suffer some diminution, more or less, according to the magnitude of the sphere. After proceeding farther in his calculations, in order to find the diameter and distance of any star, he proceeds:—'According to M. Bouguer, the brightness of the Sun exceeds that of a wax candle in no less proportion than that of 8000 to 1. If, therefore, the brightness of any of the fixed stars should not exceed that of our common candles, which, as being less luminous than wax, we will suppose to be only $\frac{1}{10000}$th part as bright as the Sun, such a star would not be visible at more than $\frac{1}{100}$th part of the distance at which it would be seen if it were as bright as the Sun. Now because the Sun would still, I apprehend, appear as bright and luminous as the star Sirius, if removed 400,000 times his present distance, such a body, if no brighter than our common candles, would appear equally luminous with that star at 400 times the distance of the Sun; and we ought then to be able, with the best telescopes, to distinguish some sensible apparent diameter of it: but the apparent diameters of the stars of lesser magnitudes would still be too small to be distinguishable even with our best telescopes, unless they were a good deal less luminous, which, however, may possibly be the case with some of them: for though we have, indeed, very slight grounds to go on with regard to the specific brightness of the fixed stars, compared with that of the Sun at present, and can, therefore, only

form very uncertain and random conjectures concerning it; yet, from the infinite variety which we find in the works of the creation, it is not unreasonable to suspect, that very possibly some of the fixed stars may have so little natural brightness in proportion to their magnitude, as to admit of their diameters having some sensible apparent size when they shall come to be more carefully examined, and with larger and better telescopes than have hitherto been in use.

'With respect to the Sun, we know his whole surface is extremely luminous, a very small and temporary interruption sometimes, from a few spots, excepted. This universal and excessive brightness of the whole surface is probably owing to an atmosphere, which being luminous throughout, and in some measure also transparent, the light proceeding from a considerable depth of it all arrives at the eye, in the same manner as the light of a great number of candles would do if they were placed one behind another, and their flames were sufficiently transparent to permit the light of the more distant ones to pass through those that were nearer without interruption.

'How far the same constitution may take place in the fixed stars we do not know; it may in some, but, with regard to others, it does not seem to be the case, particularly in those which are, in some degree, periodically more or less luminous; and also in those which have sometimes appeared and disappeared: and if those conjectures are well founded, which have been formed by some philosophers concerning stars of this kind, that they are not wholly luminous, or at least not constantly so, but that all, or by far the greatest part, of their surfaces is subject to considerable changes, sometimes becoming luminous, at others extinguished; it is among stars of this sort that we are most likely to meet with instances of a sensible apparent diameter, their light being much more likely not to be so great in proportion as that of the Sun, which, if removed to 400,000 times his pre-

sent distance, would still appear, I apprehend, as bright as Sirius, as have been observed; whereas it is hardly to be expected, with any telescope whatever, that we should ever be able to distinguish a well defined disk of any body of the same size with the Sun, at more than 10,000 times his present distance.'

Hence the greatest distance at which it would be possible to distinguish any sensible apparent diameter of a body as dense as the Sun, cannot well greatly exceed five hundred times ten thousand; that is five million times the distance of the Sun; for if the diameter of such a body were not less than 500 times that of the Sun, its light, as has been shown, could never arrive at us.

Dr. Herschel, improving on Mr. Michell's idea of the fixed stars being collected into groups, and assisted by his own observations with telescopes of extraordinary powers, has suggested a theory concerning the construction of the universe, which was as ingenious as it was new. It had been the opinion of former astronomers, that our Sun, besides occupying the centre of the system which properly belongs to him, occupied also the centre of the universe; but Dr. Herschel is of a different opinion. 'Hitherto,' says he, 'the sidereal heavens have (not inadequately for the purpose designed) been represented by the concave surface of a sphere, in the centre of which the eye of the observer might be supposed to be placed. It is true, the various magnitudes of the fixed stars even then plainly suggested to us, and would have better suited, the idea of an expanded firmament of three dimensions; but the observations upon which I am now going to enter, still farther illustrate and enforce the necessity of considering the heavens in this point of view. In future, therefore, we shall look upon those regions into which we may now penetrate by means of large telescopes, as a naturalist regards a rich extent of ground or chain of mountains containing strata variously inclined and

directed, as well as consisting of very different materials. The surface of a globe, therefore, will but ill delineate the interior parts of the heavens.'

The Sun's rising and setting for certain days this month will be as follow; viz. on the

1st,	Sun rises	14 m. past 5.	Sun sets 46 m. past 6	
11th,	- - -	33 - - - 5.	- - - 26	- - 6
21st,	- - -	53 - - - 5.	- - - 7	- - 6

Equation of Time.—The following table will point out what is to be subtracted from apparent time, to obtain equal or true time for every 5th day of the month:

			m.	s.
Thursday, Sept.	1,	from the time on the dial SUBTRACT	0	2
Tuesday, - - -	6,	- - - - - - - - - - - - - - -	1	38
Sunday, - - - -	11,	- - - - - - - - - - - - - - -	3	20
Friday, - - - -	16,	- - - - - - - - - - - - - - -	5	4
Wednesday, - -	21,	- - - - - - - - - - - - - - -	6	49
Monday, - - -	26,	- - - - - - - - - - - - - - -	8	32

The Sun enters the sign Libra on the 23d, at 55 m. past 4 in the afternoon.

The Moon enters its last quarter on the 7th day of Sept. at 34 m. past 5. The change, or New Moon, occurs at 18 m. past 11 at night on the 13th. This enters its first quarter on the 21st, at 41 m. past noon, and the Moon is at its full at 53 m. past 11 in the forenoon of the 29th.

The time of the Moon's rising for the five first days after the time of being full on the 30th of August, referred to before, will be as follows:

August	31st, - - - -	31 m. after	7
Sept.	1st, - - - -	52 - - -	7
	2d, - - - -	13 - - -	8
	3d, - - - -	34 - - -	8
	4th, - - - -	57 - - -	8

The planet Venus will eclipse, on the 15th, the star α ♌; and on the 20th, she will eclipse ρ ♌. On the 27th, the Moon will eclipse the star marked 3 ♆ ♒. The immersion will occur at 55 m. past 7 in the evening, and the emersion at ½ past 8; the star, in both cases, being 13′½ north of the Moon's.

centre. In the interval, viz. at 8 m. past 8, the Moon will be in conjunction with the star 2 ♆ ♒. The planet Jupiter is stationary on the 28th: this planet is now too near the Sun to admit of any eclipses of its satellites being visible. Mercury's superior conjunction will be at ¼ past 9 on the 21st: there will be a conjunction of Mars with the Sun at ½ past 8 in the morning on the 2d; and one of Jupiter at 3 in the morning on the 14th.

VIEW OF THE SOLAR SYSTEM.

Of the four newly-discovered planetary Bodies, Ceres, Pallas, Juno, and Vesta.

It was believed, till the present century, that the planet Jupiter was next to Mars in the solar system. On the 1st of January, 1801, the planet Ceres was discovered at Palermo, in Sicily, and since that, at different periods, three other small planetary bodies have been found to exist, whose orbits are between those of Mars and Jupiter: of these, we shall give an account in their order, according to the dates of their discovery. The planet Ceres, when first seen, was observed to be in Taurus: the nebula with which it was apparently surrounded, gave it the appearance of a comet; and it was in consequence of the suggestion of Professor Bode of Berlin, or of Baron Zack, that Piazzi, and other astronomers, ranked it among the planetary bodies.

The planet Ceres is of a ruddy colour, and with a proper telescope it appears about the size of a star of the 8th magnitude. It seems to be surrounded with a large dense atmosphere, and plainly exhibits a disk when examined with a magnifying power of about 200. This planet is situated between the orbits of Mars and Jupiter. She performs her revolution round the Sun in four years, seven months, and ten days, and her mean distance from that body is nearly 260 millions of miles. The eccentricity of her orbit is not very great, but its inclination to the ecliptic ex-

ceeds that of all the old planets. The length of its diameter was thought by Dr. Herschel not to exceed 160 miles, but, according to Schroeter, it is more than ten times that length.

Pallas, the next planet in order, was discovered at Bremen, in Lower Saxony, on the 28th of March, 1802, by Dr. Olbers, the same active astronomer who re-discovered Ceres, after it had been lost to M. Piazzi and others. Pallas is situated between the orbits of Mars and Jupiter, and is nearly of the same magnitude with Ceres, but in colour it is less ruddy: it is surrounded with a nebulosity of almost the same extent, and performs its annual revolution in about the same period. The planet Pallas, however, is distinguished in a remarkable manner from Ceres, and all the other primary planets, by the immense inclination of its orbit. While these bodies are revolving round the Sun in almost circular paths, rising only a few degrees above the plane of the ecliptic, Pallas ascends above this plane at an angle of about 35 degrees. From the eccentricity of Pallas being greater than that of Ceres, while their mean distances are nearly equal, the orbits of these two planets mutually intersect each other, a phenomenon which is altogether without a parallel in the solar system. The diameter of Pallas has not been determined with accuracy: there is, indeed, a great discordancy in the opinions of the English and German astronomers; Herschel making it only 80 miles, while Schroeter makes it no less than 2099 miles.

The planet Juno, the third of the newly discovered planets, was observed first by Mr. Harding, at the observatory of Lilienthal, near Bremen, on the evening of the 1st of September, 1804. While this astronomer was forming an atlas of all the stars which are near the orbits of Ceres and Pallas, he observed in the constellation of Pisces a small star of the 8th magnitude, which was not mentioned in the *Histoire Celeste* of La Lande; and, being ignorant of its lon-

gitude and latitude, he put it down in his chart as nearly as he could estimate with his eye. Two days afterwards, the star disappeared; but he perceived another which he had not seen before, resembling the first in size and colour, and situated a little to the south-west of its place. He observed it again on the 5th of September, and, finding that it had moved a little farther to the south-west, he concluded that this star belonged to the planetary system. The planet Juno is of a reddish colour, and is free from that nebulosity which surrounds Pallas: it is situated between the orbits of Mars and Jupiter, like the others just described. Its diameter is less, and its distance greater, than those of the other new planets. It is distinguished from all the other new planets, by the great eccentricity of its orbit; and the effect of this is so very sensible, that it passes over that half of its orbit which is bisected by its perihelion in half the time that it employs in describing the other half, which is farther from the Sun. From the same cause, its greatest distance from the Sun is double the least distance, the difference between the two distances being about 127 millions of miles. Its mean distance from the Sun is 275,000,000 English miles.

It was a century and half ago conjectured that there must be a planet between the orbits of Jupiter and Mars, on account of the distance subsisting between those two planets. The discovery of Ceres confirmed this happy conjecture; but the opinion which it seemed to establish respecting the harmony of the solar system, appeared to be completely overturned by the discovery of Pallas and Juno. Dr. Olbers, willing to find a theory that should account for the facts newly ascertained, imagined that these small celestial bodies were merely the fragment of a larger planet, which had been burst asunder by some internal convulsion, and that several more might be yet discovered between the orbits of Mars and Jupiter. He therefore concluded, that though the orbits of

all these fragments might be differently inclined to the ecliptic, yet, as they must have all diverged from the same point, they ought to have two common points of re-union, or two nodes in opposite regions of the heavens, through which all the planetary fragments must sooner or later pass. One of these nodes Dr. Olbers found to be in Virgo, and the other in the Whale; and it was actually in the latter of these regions that Mr. Harding discovered the planet Juno. With the intention, therefore, of detecting other fragments of the supposed planet, Dr. Olbers examined, thrice every year, all the little stars in the opposite constellations of the Virgin and the Whale, till his labours were crowned with success on the 29th of March 1807, by the discovery of a new planet in the constellation of Virgo, to which he gave the name of Vesta.

As soon as this discovery was made known in England, the planet was observed at Blackheath on the 26th of April 1807, by Mr. Groombridge, an active astronomer, who continued to observe it with an excellent astronomical circle till the 20th of May, when, from its having ceased to become visible on the meridian, he had recourse to other instruments. He resumed his meridional observations in the month of August, and had the good fortune, on the 8th of September, to observe the ecliptic opposition of the planet.

The planet Vesta is of the 5th or 6th magnitude, and may be seen in a clear evening by the naked eye. Its light is more intense, pure, and white, than any of the other three. It is not surrounded with any nebulosity, and has no visible disk. The orbit of Vesta cuts the orbits of Pallas, but not in the same place where it is cut by that of Ceres. According to the observations of Schroeter, the apparent diameter of Vesta is only one-half of what he found to be the apparent diameter of the 4th satellite of Saturn; and, yet, it is very remarkable that its light was so intense,

that Mr. Schroeter saw it several times with the naked eye. The period of its revolution about the Sun is 1 year and 66 days.

We shall resume this subject in the next month's observations.

The Naturalist's Diary.

Now sober Autumn, with lack lustre eye,
Shakes with a chiding blast the yellow leaf,
And hears the woodman's song
And early sportsman's foot.

EACH season of the revolving year produces a variety of picturesque appearances peculiar to itself. The emotions which affect the mind, while it contemplates scenes which every month contributes to diversify, must, consequently, be of various kinds, all suitable to the season. The vivid beauties of spring, the glowing skies of summer, the fading scenes of autumn, and the dreary aspect of winter, excite, respectively, vivacity, languor, solemnity, or dejection. Summer, refulgent 'child of the Sun,' has retired with 'his ardent look' from our northern regions, and each gaudy flower disappears. Rural scenery, however, is much enlivened by the variety of colours, some lively and beautiful, which are assumed, towards the end of the month, by the fading leaves of trees and shrubs.

How sweetly pleasing to behold
Forests of vegetable gold!
How mixed the many chequered shades between
The tawny mellowing hue, and the gay vivid green!

FAWKES.

Partridges (*tetrao perdix*) are in great plenty at this season of the year: they are chiefly found in temperate climates, but no where in such abundance as

in England. Partridges pair early in the spring: about the month of May, the female lays from fourteen to eighteen or twenty eggs, making her nest of dry leaves or grass upon the ground. The young birds learn to run as soon as hatched, frequently encumbered with part of the shell sticking to them; and picking up slugs, grain, ants, &c[1]. While the corn is standing they have a secure retreat from their numerous enemies; but when the harvest is gathered in, they resort, in the daytime, to groves and covers. At night, however, they return to the stubble to avoid foxes, weasels, &c. and there nestle together. From *man* they have no means of escape; for they are traced to their hiding-places by pointers, and are often inclosed in nets, and taken by whole coveys.

The shooting of partridges is well described in the following lively sketch:—

'We now proceed beating each field with unrelaxing diligence: we try swathe oats or wheat, or barley stubble, then look the clover; or turnips are more likely: in that, each piece of land we enter gives fresh hopes: we are sure they must be there; but having beat this field and that, in vain, we have a better founded hope of finding in the next adjoining. Nor does expectation droop beneath repeated disappointment. At length the dogs are certain in the turnips, and we approach with ardour heightened by delay; the dogs stand immoveable as blocks of stone, and the heart beats with rapture at the approaching moment:—

> In his mid career, the spaniel struck
> Stiff by the tainted gale, with open nose,
> Outstretched, and finely sensible, *draws* full,
> Fearful, and cautious, on the latent prey;

1 It is no uncommon thing to introduce partridges' eggs under the common hen, who hatches and rears them as her own; in this case the young birds require to be fed with ants' eggs, which are their favourite food, and without which it is almost impossible to bring them up; they likewise eat insects, and, when full grown, feed on all kinds of grain and young plants.

As in the sun the circling covey bask
Their varied plumes, and, watchful every way,
Through the rough stubble turn the secret eye.

'A partridge now rises with a rustling noise, and spreads its wings: my well-aimed gun quickly stops him in his flight, and kills him on the spot. This is the moment which a novice in the field would think the highest pitch of joy; but he is mistaken: the pleasure ceases with the victory; the lifeless animal is negligently thrown into the bag, and all the eagerness of hasty charging is repeated, lest other birds should rise while I am unprepared.'

The affection of the partridge for her young is peculiarly strong and lively. She is greatly assisted in the care of rearing them by her mate: they lead them out in common, call them together, point out to them their proper food, and assist them in finding it by scratching the ground with their feet; they frequently sit close by each other, covering the chickens with their wings like the hen. In this situation, they are not easily *flushed;* and the sportsman, who is attentive to the preservation of his game, will carefully avoid giving any disturbance to a scene so truly interesting. Should the pointer, however, come too near, or unfortunately run in upon them, there are few who are ignorant of the confusion that follows. The *male* first gives the signal of alarm by a peculiar cry of distress, throwing himself, at the same moment, more immediately into the way of danger, in order to deceive or mislead the enemy; he flies, or rather runs, along the ground, hanging his wings, and exhibiting every symptom of debility, in order to decoy the dog to a distance from the covey: the *female* flies off in a contrary direction, and to a greater distance, but, returning soon after by secret ways, she finds her scattered brood closely squatted among the grass; and, collecting them in haste, she leads them from the danger, before the dog has had time to return from his pursuit.

There are few plants in flower this month except saffron (*crocus sativus*) and ivy (*hedera helix*). Among the *maritime* plants may be named, the marsh glasswort (*salicornia herbacea*), and the sea stork's bill (*erodium maritimum*) on *sandy shores*; and the officinal marsh-mallow (*althæa officinalis*) in *salt marshes*.

Herrings (*clupea*) pay their annual visit to England in this month, and afford a rich harvest to the inhabitants of its eastern and western coasts. Exclusive of the various methods of preparing this fish for sale, in different countries, an immense quantity of oil is drawn from it, forming a great and important commercial article among the northern nations. From Mr. Pennant's British Zoology, we extract the following interesting sketch of the general history of the herring and its supposed migrations.

'The great winter rendezvous of the herring is within the arctic circle: there they continue many months in order to recruit themselves after the fatigue of spawning, the seas within that space swarming with insect food in a far greater degree than in our warmer latitudes.

'This mighty army begins to put itself in motion in the spring: we distinguish this vast body by that name, for the word herring is derived from the German, *Heer*, an army, to express their numbers. They begin to appear off the Shetland Isles in April and May: these are only forerunners of the grand shoal which comes in June, and their appearance is marked by certain signs, by the numbers of birds, such as gannets and others, which follow to prey on them: but when the main body approaches, its breadth and depth is such as to alter the very appearance of the ocean. It is divided into distinct columns of five or six miles in length, and three or four in breadth, and they drive the water before them with a kind of rippling: sometimes they sink for the space of ten or fifteen minutes; then rise again to the

surface, and, in bright weather, reflect a variety of splendid colours, like a field of the most precious gems.

'The first check this army meets in its march southward, is from the Shetland Isles, which divide it into two parts; one wing takes to the east, the other to the western shores of Great Britain, and fill every bay and creek with their numbers: others pass on towards Yarmouth, the great and antient mart of herrings: they then pass through the British Channel, and, after that, in a manner disappear: those which take to the west, after offering themselves to the Hebrides, where the great stationary fishery is, proceed toward the north of Ireland, where they meet with a second interruption, and are obliged to make a second division: the one takes to the western side, and is scarce perceived, being soon lost in the immensity of the Atlantic; but the other, which passes into the Irish sea, rejoices and feeds the inhabitants of the coasts that border on it[1].'

Among the principal enemies of this fish may be numbered various species of whales, some of which are observed to pursue large shoals, and to swallow them in such quantities, that, in the stomach of a single whale, no less than six hundred herrings are said to have been found[2].

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[1] The reality of this migration, however, is doubted by Dr. Bloch and Dr. Shaw; these eminent naturalists concurring in opinion, that herrings, like mackerel, inhabit, during winter, the deep recesses of the ocean, or plunge beneath the soft mud at the bottom.

[2] A large herring-fishery is carried on at Douglas, in the Isle of Man. Herrings are so abundant in the neighbourhood of Gottenburgh, that 20,000 barrels, on an average, are salted there every year, and about 400,000 are employed for making train oil: besides these, 50,000 barrels are consumed fresh in the country, or sent to Denmark. Allowing 1200 fish to each barrel, in this district alone, about 720,000,000 of herrings are caught in a season. In the year 1776, 56,000 barrels were sent to Ireland, and thence exported to the West Indies.

Various of the feathered tribe now commence their autumnal music:

> The *thrush*, the *blackbird*, and the *woodlark* now
> Cheerer of night, their pleasing song resume;
> The *stone-curlew* his chattering note repeats;
> And the *wood owl* continual breaks the depth
> Of sylvan darkness with discordant moans.

Some curious particulars respecting the *snake's slough*, in this month, are recorded by Mr. White. 'About the middle of September (says this attentive naturalist) we found in a field, near a hedge, the slough of a large snake, which seemed to have been newly cast. From circumstances it appeared as if turned the wrong side outward, and as drawn off backward, like a stocking or woman's glove. Not only the whole skin, but scales from the very eyes, are peeled off, and appear in the head of the slough like a pair of spectacles. The reptile, at the time of changing his coat, had entangled himself intricately in the grass and weeds, so that the friction of the stalks and blades might promote this curious shifting of his exuviæ.' Upon this account, Mr. Markwick observes, 'I have seen many sloughs or skins of snakes entire after they have cast them off; and, once in particular, I remember to have found one of these sloughs so intricately interwoven among some brakes, that it was with difficulty removed without being broken.'

Among the few insects that appear in this month, are the phalæna russula, and the saffron butterfly (*papilio hyale*).

> Pressed from th' exub'rant orchard's fruitful bound,
> Pomona pours a sparkling tide, that vies
> With the rich juices of the purple vine;
> Lo! russet Labour's busy train, both old
> And young, shake numerous down the mellow fruit,
> Streaked with a cheek as ruddy as their own.

The principal harvest of apples is about the end of this month; and the counties of Worcestershire,

Somersetshire, and Devonshire, are busily employed in cider-making. *Perry* is made from pears, and is extremely grateful, being preferred by many persons to cider. Hazel-nuts are now ripe. The oak begins to shed its acorns, and the beech nuts fall; both of which are termed mast. A luxurious pasturage is afforded for such *hogs* as are kept on the borders of forests, for about six weeks, from the end of September.

From oak to oak they run with eager haste,
And, wrangling, share the first delicious taste
Of fallen ACORNS; yet but thinly found
Till the strong gale has shook them to the ground.
It comes; and roaring woods obedient wave:
Their home, well pleased, the joint adventurers leave:
The trudging Sow leads forth her numerous young,
Playful, and white, and clean, the briars among,
Till briars and thorns increasing, fence them round,
Where last year's mould'ring leaves bestrew the ground;
And o'er their heads, loud lashed by furious squalls,
Bright from their cups the rattling treasure falls;
Hot, thirsty food; whence doubly sweet and cool
The welcome margin of some rush-grown pool.

BLOOMFIELD.

The autumnal equinox happens on the 22d of September, and, at this time, the days and nights are equal all over the earth. About this period, heavy storms of wind and rain are experienced, as well as at the vernal equinox.

The chimney or common swallow (*hirunda rustica*) disappears about the end of the month.

There is, perhaps, no subject in natural history which has more engaged the attention of naturalists, in all ages, than the *winter retreat of the swallow*, neither is there any subject about which more various and contrary opinions have been entertained. Some writers suppose that they do not leave this island at the end of autumn, but that they lie in a torpid state, till the beginning of summer, in the banks of rivers, in the hollows of decayed trees, in holes and crevices of old buildings, in sand-banks and the like,

Some have even asserted that swallows pass the winter immersed in the water of lakes and rivers, where they have been found in clusters, mouth to mouth, wing to wing, foot to foot; and that they retire to these places in autumn, and creep down the reeds to their subaqueous retreats. In support of this opinion, Mr. Klein very gravely asserts, on the credit of some countrymen, that swallows sometimes assemble in numbers, clinging to a reed till it breaks, and sinks with them to the bottom; that their immersion is preceded by a song or dirge, which lasts more than a quarter of an hour; that sometimes they lay hold of a straw with their bills, and plunge down in society; and that others form a large mass by clinging together by the feet, and, in this manner, commit themselves to the deep.

While we consider such statements as the above as ridiculous, and unworthy of refutation, it must not be denied that swallows have been sometimes found in a torpid state during the winter months; but such instances are by no means common, and will not support the inference, that, if any of them can survive the winter in that state, the whole species is preserved in the same manner[1].

A single swallow has been observed so late as the latter end of October; and some assert that these birds have been seen near Christmas. Mr. White mentions having observed a house-martin flying about in November, long after the general migration had taken place. Many more instances might be given of such late appearances, which, added to the well-

[1] That other birds have been found in a torpid state, may be inferred from the following curious circumstance recorded by Mr. Bewick: 'A few years ago, a young *cuckoo* was found in the thickest part of a close furze bush; when taken up, it presently discovered signs of life, but was quite destitute of feathers: being kept warm and carefully fed, it grew and recovered its coat of feathers. In the spring following, the cuckoo made its escape, and, in flying across the river Tyne, it gave the usual call.'

authenticated accounts of swallows having been found in a torpid state, leave us no room to doubt, that such young birds as were late hatched, and consequently not strong enough to undertake a long voyage to the coast of Africa, are left behind, and remain concealed in hiding places, till the return of spring. On the other hand, that *actual migrations* of the swallow tribe do take place, has been fully proved, from a variety of well-attested facts, most of which are taken from the observations of navigators who were eye-witnesses of their flights, and whose ships have sometimes afforded a resting-place to the weary travellers.

To the many on record we shall add the following, which was communicated to Mr. Bewick by a very sensible master of a vessel. While sailing between the islands of Majorca and Minorca, his attention was arrested by great numbers of swallows flying northward, many of which alighted on the rigging of the ship in the evening, but disappeared before morning.

But, after all our inquiries into this branch of natural economy, much yet remains to be known, and we may conclude in the words of the ingenious Mr. White:—'that while we observe with delight, with how much ardour and punctuality those little birds obey the strong impulse towards migration or hiding, imprinted on their minds by their great Creator, it is with no small degree of mortification we reflect, that, after all our pains and inquiries, we are not yet quite certain to what regions they do migrate, and are still farther embarrassed to find that some actually do not migrate at all.'

Amusive birds! say where your hid retreat,
When the frost rages, and the tempests beat;
Whence your return, by such nice instinct led,
When Spring, sweet season, lifts her bloomy head?
Such baffled searches mock man's prying pride;
The God of Nature is your secret guide.

Many other of the small billed birds that feed on insects disappear when the cold weather commences. The *throstle*, the *red-wing*, and the *fieldfare*, which migrated in March, now return; and the *ring-ouzel* arrives from the Welsh and Scottish Alps to winter in more sheltered situations. All these birds feed upon berries, of which there is a plentiful supply in our woods, during a great part of their stay. The throstle and the red-wing are delicate eating. The Romans kept thousands of them together in aviaries, and fed them with a sort of paste made of bruised figs and flour, &c. to improve the delicacy and flavour of their flesh. These aviaries were so contrived as to admit but little light; and every object which might tend to remind them of their former liberty was carefully kept out of sight, such as the fields, the woods, the birds, or whatever might disturb the repose necessary for their improvement. Under this management, these birds fattened to the great profit of their proprietors, who sold them to Roman epicures for three *denarii*, or about two shillings each of our money.

Towards the end of September the leaves of trees begin to put on their autumnal dress. Mr. Stillingfleet remarks, that, about the 25th, the leaves of the plane tree were tawny; of the hazel, yellow; of the oak, yellowish green; of the sycamore, dirty brown; of the maple, pale yellow; of the ash, a fine lemon-colour; of the elm, orange; of the hawthorn, tawny yellow; of the cherry, red; of the hornbeam, bright yellow; of the willow, still hoary. Yet many of these tints cannot be considered complete, in some seasons, till the middle or latter end of October.

When the harvest is gathered in, the husbandman prepares for seed-time; and the fields are again ploughed up for the winter corn, rye, and wheat, which are sown in September and October. The entrances to bee-hives are straitened, to prevent the access of wasps and other pilferers.

October.

'IN a garment of yellow and carnation, upon his head a garland of oake leaves, with the acornes; in his right hand the sign Scorpio; in his left a basket of servises, medlers, and chestnuts, and other fruits, that ripen at the later time of the year; his robe is of the colour of the leaves and flowers decaying. This moneth was called *Domitianus* in the time of Domitian by his edict and commandment; but after his death, by the decree of the Senate, it took the name of October, every one hating the name and memory of so detestable a tyrant.' (*Peacham*, p. 420-21.)

'October had the name of *wyn-monat*; and albeit they had not antiently wines made in Germany, yet in this seson had they them from divers countries adjoyning.' (*Verstegan*, p. 61.)

Remarkable Days.

1.—SAINT REMIGIUS.

REMIGIUS was born at Landen, where he so closely pursued his studies, that he was supposed to lead a monastic life. After the death of Bennadius, he was, on account of his exemplary piety and extraordinary learning, chosen Bishop of Rheims. He converted to Christianity not only King Clodoveus, but also a considerable part of his subjects; hence he is honoured by some devotees with the title of the French Apostle. After he held his bishopric 74 years, he died at 96 years of age, A.D. 535. The cruise which he used was preserved in France, their kings being formerly anointed from it at their coronation.

6.—SAINT FAITH.

This virgin saint was born at Pais de Gavre in France. She suffered many cruel torments, and was afterwards martyred, under Dacianus, about the year 290.

9.—SAINT DENYS.

Saint Denys, or Dionysius, the Areopagite, was converted to Christianity by St. Paul. See *Acts* xvii. He was, at first, one of the Judges of the celebrated court of the Areopagus, but was afterwards made Bishop of Athens, where he suffered martyrdom for the sake of the gospel. There are several books which bear his name; but they are, no doubt, forgeries of the sixth century. The French say, that he was the first that preached the gospel among them, and for that reason consider him their tutelar saint; but for this supposition there is no ground, as Christianity was never preached in France until long after his decease. Among the thousand idle tales related of Denys, the following is perhaps the most ridiculous and incoherent: he is said to have been beheaded by Fescennius, the Roman governor at Paris;

and at the time of his martyrdom *he took up his head after it was severed from his body, and walked two miles with it in his hands*, to a place called the Martyr's-hill, and there laid down to rest.

13.—TRANSLATION OF KING EDWARD THE CONFESSOR.

He was the youngest son of King Ethelred; but as all his elder brothers were either dead, or had fled away, he succeeded to the crown of England in the year 1042. He collected all the most useful laws made by the Saxon and Danish kings. The additional title of Confessor was probably given him by the pope, for settling what was then called *Rome-Scot*, but now is better known by the name of *Peter's Pence*. The monks ascribed a number of miracles to him: even his vestments were reputed holy. His crown, chair, staff, spurs, &c. are still used at the coronation of our English kings.

17.—SAINT ETHELDREDA.

She was a princess of distinguished piety, daughter of Anna, king of the East-Angles, and Hereswitha his queen, and was born about the year 630, at Ixning, a small village in Suffolk. She was educated at home under the care and inspection of her illustrious parents; and, in her childhood, her mildness of temper and innocence of behaviour, added to the beauty of her person, rendered her the delight of all about her. Etheldreda early devoted herself to the service of God, and resolved to remain single; at the earnest solicitation of her parents, however, she at length, in the year 652, married Tonbert, a principal nobleman among the East-Angles, and had the Isle of Ely settled on her as a dower. Her husband died in about three years, and she becoming possessed of the whole of this property, and wishing to give herself up entirely to the exercise of devotion, retired into the Isle of Ely. The place she had chosen seemed very proper for her purpose, for, as an island, it was separated as it were from the rest of the world;

and *the deepness of the waters, and extensiveness of the fens which encompassed it*, rendered it very difficult of access; so that nature seemed to have formed it for solitude and contemplation.'

But Etheldreda was not doomed to live for a long time in this recluse state; another husband was in reserve for her, and, however unwilling she might be to enter again into connubial bonds, she was, after much persuasion from King Ethelwolf, married to Prince Egfrid, at York, with great pomp and solemnity. Egfrid was not more than fifteen or sixteen years old. In the year 670, Oswy, the father of this young man, died, and Etheldreda was now queen of the greatest of the Saxon kings. Her exalted station, however, made no change in her sentiments, and she solicited permission from her husband to retire into a monastery; who, wearied with her importunities, at last granted her request, and she accordingly took the veil at Coldingham Abbey, in Yorkshire, over which Ebba, the king's aunt, then presided. After some time, Egfrid was advised to take his wife by force from this retirement; but the queen being informed of it, fled into the Isle of Ely, where, in the year 673, she founded the conventual church of Ely, with the adjoining convent. Of this monastery she was constituted abbess, the monks and nuns living in society and regular order: it flourished for nearly two hundred years, but was destroyed, with its inhabitants, by the Danes, in 870. In *Bentham's History of Ely*, (4to, Lond. 1771, pp. 46-59) from which the above narrative has been collected, there are three curious plates relative to St. Etheldreda. The *first* (Plate VIII) is the effigies of the saint, in which she is pourtrayed with a pastoral staff in one hand, and is looking earnestly on a book which lies open in the other. The *second* (Plate IX) represents her marriage with Egfrid, and the ceremony of her taking the veil. The *third* (Plate X) contains the history of some miraculous events which happened

to Etheldreda in her travels from York to Ely; particularly the budding of her pilgrim's staff, which she had fixed in the ground while she slept.

18.—SAINT LUKE THE EVANGELIST.

Luke was born at Antioch, the metropolis of Syria, a place celebrated for the study of the liberal arts. He was probably converted by Paul, during his abode at Antioch: after visiting Macedonia, he appears to have been a constant companion of his travels and sufferings, and is frequently mentioned as such in the epistles. The notion that Saint Luke was a painter is without foundation, as it is not countenanced by antient writers. Dr. Lardner thinks that he might have been by profession a physician, as the expression 'beloved physician,' *Col.* iv, 14, seems to intimate. Luke lived a single life, and died in the 84th year of his age, about the year of Christ 70; probably a natural death, because none of the antient writers say any thing of his martyrdom. Philostorgius informs us, that, in the reign of the Emperor Constantius, the reliques of Saint Luke were translated from Achaia to Constantinople; and, therefore, it must have been a general persuasion in those times that St. Luke had died and had been buried in Achaia.

25.—ACCESSION OF KING GEORGE III.

Upon the death of George II, his present Majesty came to the throne, on the 22d of September 1760.

25.—SAINT CRISPIN.

Two brothers, Crispinus and Crispianus, were born at Rome; whence they travelled to Soissons in France, about the year 303, to propagate the Christian religion. Being desirous, however, of rendering themselves independent, they gained a subsistence by shoe-making. It having been discovered that they privately embraced the Christian faith, and endeavoured to make proselytes of the inhabitants, the governor of the town immediately ordered them to

be beheaded, about the year 308. From this time the shoe-makers chose them for their tutelar saints.

26.—PROCLAMATION OF KING GEORGE III.

His present Majesty was proclaimed King on the 26th of October 1760, the day after his accession to the throne.

28.—SAINT SIMON AND SAINT JUDE, *Apostles.*

Simon is called the *Canaanite*, from the Hebrew word *Cana*, to be zealous: hence his name of *Simon Zelotes*, or the Zealot, *Luke* vi, 15. Simon being invested with the apostolic office, continued with the rest of the apostles till their dispersion, and then applied himself to the execution of his charge. Nicephorus says, that, having received the Holy Spirit, he travelled through Egypt, Cyrene, Mauritania, and Libya. Some traditions mention his visiting Britain, where he continued to preach the Gospel and perform many miracles; and afterwards, enduring various troubles and afflictions, he, with great cheerfulness, suffered death on the cross.

Jude is called both by the name of Thaddæus and Libbæus: *Matt.* x, 3, and *Mark* iii, 18. Jude, the brother of James: *Jude*, verse 1. And Judas, not Iscariot. *John* xiv, 22. He was of our Lord's kindred; *Is not his mother called Mary, and his brethren James and Joses, and Simon and Judas?* *Matt.* xiii, 55. After our Lord's ascension to heaven, Eusebius says, that Thomas, one of the twelve apostles, despatched Thaddæus, one of the seventy disciples, to Abgarus, Governor of Edessa, where he healed diseases, wrought many miracles, expounded the doctrines of Christianity, and converted Abgarus and his people to the faith, refusing the presents of gold and silver that were offered to him by the governor. Cave observes that he is acknowledged by many writers of the Latin church to have travelled into Persia, where, after great success in his apostolic ministry, he was at last, for a free and open reproof of the superstitious rites of the Magi, cruelly

put to death. He has left one epistle of universal concern addressed to all Christians.

It appears that St. Simon's and St. Jude's Day was accounted *rainy* as well as St. Swithin's, from the following passage in the old play of the Roaring Girls: 'As well as I know 'twill rain upon Simon and Jude's Day.' See Reed's Old Plays, vol. vi, p. 23. And again: 'Now a continual Simon and Jude's rain beat all your feathers as flat down as pancakes.' Ibid. p. 31. And we learn from Holinshed that, in 1536, when a battle was appointed to have been fought upon this day between the king's troops and the rebels in Yorkshire, so great a quantity of rain fell upon the eve thereof, as to prevent the battle from taking place.

Astronomical Occurrences.

Of the Origin of the four newly discovered Planets.

The existence of four planets between the orbits of Mars and Jupiter, revolving round the Sun, at nearly the same distances, and differing from all the other planets in their dimnutive size, and in the form and position of their orbits, is acknowledged to be one of the most singular phenomena in the history of astronomy. The discordance of these phenomena with the regularity of the planetary distances, and with the general harmony of the system, naturally suggests the opinion, that the inequalities in this part of the system were produced by some great convulsion, and that the four planets, as we have already hinted, are the fragments of a large celestial body, which once existed between Mars and Jupiter. To suppose them independent planets, as they must necessarily be, if they did not originally form one, their diminutive size, the great eccentricity and inclination of their orbits, and their numerous intersections, when projected on the

plane of the ecliptic, are phenomena absolutely inexplicable on every principle of science, and subversive of that harmony and order which, before the discovery of these bodies, seemed to pervade the planetary system. Admitting, however, the hypothesis that these planetary bodies are the remains of a larger body, which circulated round the Sun, nearly in the orbit of the greatest fragment, the system resumes its order, and we discover a regular progression in the distances of the planets, and a general harmony in the form and position of their orbits. But independently of analogical reasoning, the elements of the new planets furnish several direct arguments, drawn from the eccentricity and inclination of their orbits, and from the position of their perihelion and nodes; and all concurring to show that the four new planets have diverged from one point, and have, therefore, been originally combined in a larger body.

Let us inquire into the consequences that would arise from the bursting of a planet, and endeavour to determine, within certain limits, the form and position of the orbits in which the larger fragments would revolve round the Sun. When the planet is burst in pieces by some internal force capable of overcoming the mutual attraction of the fragments, it is obvious that the larger fragment will receive the least impetus from the explosive force, and will, therefore, circulate in an orbit deviating less than any other of the fragments from the original path of the large planet; while the lesser fragments, being thrown off with greater velocity, will revolve in orbits more eccentric, and more inclined to the ecliptic. The eccentricity of Ceres and Vesta is nearly $\frac{3}{12}$th of their mean distance, that of Ceres being the greater: and the eccentricity of Pallas and Juno is $\frac{1}{4}$th of their mean distance, the eccentricity of the former being rather the largest. Hence we should expect, from the theory, that Pallas and Juno would be smaller than Ceres and Vesta, and that Ceres should be the larger fragment,

and should have an orbit more analogous in eccentricity and inclination than any of the smaller fragments to the other planets of the system. As far as the diameters of the new planets have been measured, the theory is most strikingly verified by observation. The observations of Schroeter make Juno considerably less than Ceres; and though the diameter of Vesta has not been accurately ascertained, yet the intensity of its light, and the circumstance of its being sometimes distinctly visible to the naked eye, are strong proofs that it exceeds in magnitude both Pallas and Juno.

The resemblance between the two lesser fragments, Pallas and Juno, in their magnitudes, and in the extreme eccentricity of their orbits, would lead us to anticipate similar resemblances in the position of their nodes, in the place of their perihelia, and in the inclination of their orbits; while the elements of Ceres and Vesta should exhibit similar coincidences. Now it is found that the inclination of Ceres is 10′, and that of Vesta 7°; while the inclination of Juno is 21°, and that of Pallas 34°; the two greater fragments having nearly the same inclination, and keeping near the ecliptic, while the lesser fragments diverge from the original path, and rise to a great height above the ecliptic, and far above the orbits of all the other planets in the system. If it shall hereafter be found that Vesta is one of the smaller fragments, we shall then be able to account for its position with regard to Ceres, and for the small inclination and eccentricity of its orbit, by supposing the planets Ceres, Pallas, and Juno, to have diverged in the same plane, and nearly at right angles to the ecliptic, whilst Vesta diverged from the direction of the original planet, in a plane parallel with the ecliptic. This opinion is strongly confirmed by the fact, that the orbit of Vesta is nearer to the Sun than any of the orbits of the other three fragments. In the position of the nodes, we perceive the same coincidence; the orbits of Pallas and Juno cut the ecliptic in the same point, and the nodes of Ceres and Vesta are not far distant.

If all the fragments of the original planet had, after the explosion, been attracted to the larger fragment, it is obvious that they would all move in the same orbit, and consequently have the same perihelion. If the fragments received a slight degree of divergency from the explosive force, and moved in separate orbits, the points of their perihelion would not coincide, and their separation would increase with the divergency of the fragments. But since the several fragments partook of the motion of the primitive planet, the angle of divergency could never be very great, and therefore we should expect that all the perihelia of the new planets would be in the same quarter of the heavens. This theoretical deduction is most wonderfully confirmed by observation; for it is found that all the perihelia are in the same semicircle, and all the aphelia in the opposite semicircle: the perihelia of the two larger fragments, Ceres and Vesta, being near each other, as might have been expected, while there is a similar proximity between the perihelia of the lesser fragments, Pallas and Juno.

These singular resemblances in the motions of the greater fragments, and in those of the lesser fragments, and the striking coincidences between the theory and observation in the eccentricity of their orbits, in their inclination to the ecliptic, in the position of their nodes, and in the places of their perihelia, are phenomena which could not result from chance; and which concur to prove, with an evidence amounting almost to demonstration, that the four new planets have diverged from one common node, and have therefore composed a single planet.

We may proceed to consider other phenomena that may be supposed to accompany this great convulsion. When the cohesion of the planet was overcome by the action of the explosive force, a number of little fragments, detached along with the greater masses, would, on account of their smallness, be projected with very great velocity; and being thrown beyond the attraction of the larger fragments, might fall to-

wards the earth when Mars happened to be in the remote part of his orbit. These fragments will evidently be thrown off with the greatest velocity, and will always be separated from those parts which formed the central portions of the primitive planet. The detached fragments, therefore, which are projected beyond the attractive force of the larger masses, must always have been torn from the central parts of the original body. When the portions which are thus detached arrive within the sphere of the earth's attraction, they may revolve round that body at different distances, and may fall upon its surface, in consequence of a diminution of their centrifugal force; or, being struck by the electric fluid, they may be precipitated on the earth, and exhibit all those phenomena which usually accompany meteoric stones. Hence the reason why the fall of these bodies is sometimes attended with explosions, and sometimes not, and why they generally fall obliquely, and sometimes horizontally; a direction which they could never assume, if they descended from a state of rest in the atmosphere, or had been projected from volcanoes on the surface of the earth.

Another argument in favour of this theory has been taken from the density of the new planets, compared with that of the meteoric stones. For since the fragments of the large planet, which are supposed to be meteoric stones, must have been detached from the central parts of the primitive planet, the specific gravity of meteoric stones ought to exceed the average density of the planet. The density of the whole earth is 4.8, but the density of Schehallien*, a mountain in Scotland, is but 2.7; of course, the density of the central parts of our globe cannot be less than 7 or 8, in order to make up the mean density. Now, the density of the new planets is found to be nearly 2;

* See Sir John Pringle's excellent 'Discourse on the Attraction of Mountains,' 1775.

and, following the proportion just stated in the case of the earth, we might expect that the average density of meteoric stones should be about 3.2, which happens to be the exact specific gravity of the greatest number of these bodies. This coincidence is truly surprising; and, when taken in connection with the evidence arising from the form and position of the orbits of new planets, gives a probability to the theory which no other hypotheses can claim.

The Sun's rising and setting at intervals this month will be as follows:—

Saturday,	1st,	Sun rises 12 m.	past 6.	Sun sets at 48 m.	past 5
Tuesday,	11th,	32	6	28	5
Friday,	21st,	51	6	9	5
Monday,	31st,	10	7	50	4

Equation of Time.—The following table will enable the reader to adjust his clock or watch to true or equal time, by subtracting a certain number of minutes and seconds from apparent time:

			m.	s.
Saturday,	1st,	from the time on the dial SUBTRACT	10	11
Thursday,	6th,		11	43
Tuesday,	11th,		13	5
Sunday,	16th,		14	14
Friday,	21st,		15	10
Wednesday,	26th,		15	50
Monday	31st,		16	12

The Sun enters the sign Scorpio at a minute after 1 in the morning of the 24th.

The Moon enters its last quarter at 58 m. past 11 in the forenoon of the 6th. The new Moon, or change, will be at 51 m. past 10 in the forenoon of the 13th: it enters its first quarter at 49 m. past 8 in the morning of the 21st, and is full at 16 m. past midnight of the 28th. The time of the Moon's rising, the first six days after the full in September, will be as follows:—

Sept. 30th,	48 m.	past 6
Oct. 1st,	9	7
2d,	35	7
3d,	7	8
4th,	45	8
5th,	34	9

On the 1st day of the month, the Moon will eclipse the star μ Ceti: the immersion will be 40 m. past 10 in the evening, and the emersion at 41 m. past 11; in the former case, the star will be near 5 m. south of the Moon's centre, and in the latter 8′½ on the same side. On the 30th, there will be also an eclipse of the 1 δ ♉, of which the immersion will be at 15 m. past 1 in the morning, and the emersion 21 m. past 2: at the immersion, the star will be 4′½ south of the Moon's centre, and at the emersion it will be 9′⅓ on the same side.

On the 20th, at 33 m. past 5 o'clock in the morning, there will be an eclipse of Jupiter's second satellite.

VIEW OF THE SOLAR SYSTEM.

Of Jupiter.

Jupiter is, with the exception of Venus, the most brilliant of all the planets: he is the largest body in the whole solar system, excepting the Sun, around which they all revolve, his diameter being eleven times greater than that of the earth, or nearly 90,000 English miles in length. He moves from the west to the east in a period of 4332 days, or in 11 years 318 days. Before he comes into opposition, and, when distant from the Sun, in the course of its revolution, about 115°, his motion becomes retrograde, and increases in swiftness till he comes in opposition. The motion then becomes gradually slower, and is *direct* when the planet advances within 115° of the Sun. The direction of the retrograde motion is about 121 days, and the arc of retrogradation described is about 10°. With respect to all the superior planets, the farther they are from the Sun, the less is the arc of retrogradation, but the longer time is taken in describing it; for, were the distance of the planets indefinitely great, the arc of retrogradation would be extremely small.

Jupiter has the same general appearance with Mars, only that the belts on his surface are much larger and more permanent. They are not to be seen but by a good telescope, and their appearances differ very much at different times, and even at the same time in telescopes of different powers. Their number is very variable, as sometimes only one, and at others there are as many as eight. They are generally parallel to one another, but not always so; and their breadth is likewise variable, one belt having been observed to grow narrow, while another in its neighbourhood has increased in breadth. They seem almost always to be of an uniform tint; but in very favourable weather, they sometimes seem to consist of a number of curved lines, something like strokes made with the graver. The time of their continuance is very uncertain, sometimes remaining unchanged for three months; at others, new belts have been found, in an hour or two. In some of these belts, large black spots have occasionally appeared, which were observed to move swiftly over the disk from east to west, and to return in a short time to the same place. The belts of Jupiter were first observed at Naples by Zuppi and Bartoli, two Jesuits; and about the year 1660, they were observed by Campani, with refracting telescopes of his own construction, and not much inferior in distinctness to those of the present day; the great modern improvement in refracting telescopes consisting rather in the reduction of their size than in the increase of their magnifying power.

The figure of Jupiter is that of an oblate spheroid, the longest diameter being to the shortest in the proportion as 13 to 12; his rotation being from west to east, like that of the Sun, and the plane of his equator being very nearly coincident with that of his orbit, so that there can be scarcely any difference of seasons in that planet. His rotation has been observed to be somewhat quicker in his aphelion than his perihelion. The axis of rotation is nearly perpen-

dicular to the plane of the ecliptic, and the planet makes one diurnal revolution in 9 h. 55 m. 37 s. The changes in the appearance of his spots, and the difference in the time of their rotation, make it probable that they do not adhere to Jupiter, but are clouds transported by the winds with different velocities in an atmosphere subject to violent agitations.

The apparent diameter of this planet differs from 46″ to 31″; but his mean apparent diameter is equal to 36″.

Jupiter is accompanied by four satellites, which were first discovered by Galileo on the 8th of January 1610. The relative situation of these small bodies changes at every instant: they oscillate, as it were, on each side the planet, and it is by the extent of these oscillations that the rank of the satellites is determined, that being called the first satellite whose oscillation is the least. They are sometimes seen to pass over the disk of the planet, and project a shadow in the form of a well defined black spot, when they describe a chord over his disk. Hence it is inferred that Jupiter and his satellites are opaque bodies enlightened by the Sun; and when the latter interpose between the Sun and Jupiter, they produce real solar eclipses precisely similar to those which the Moon occasions on the earth. This phenomenon leads to the explanation of another which the satellites present. They are often observed to disappear, though, at some distance from the disk of the planet, the third and fourth reappear sometimes on the same side of the disk. The shadow which Jupiter projects behind it is the only cause that can explain these disappearances, which are perfectly similar to eclipses of the Moon. The circumstances which accompany them leave no doubt of the reality of the cause. The satellites are always observed to disappear on the side of the disk opposite to the Sun, and consequently on the same side to which the conical shadow is projected. They are eclipsed nearest the disk when the planet is nearest

to its opposition. Lastly, the duration of these eclipses answers to the time which should elapse while they traverse the shadow of Jupiter.

Thus, it is evident that these satellites move from west to east. Their mean sidereal and synoidical revolutions, as seen from the centre of Jupiter, are very accurately determined by comparing eclipses at long intervals from each other, and observed near the opposition of the planet. It is thus discovered that the motion of Jupiter's satellites is almost circular and uniform, because this hypothesis corresponds very nearly with those eclipses which happen when we see the planet in the same position relatively to the Sun. Therefore, the positions of the satellites at every instant, as seen from the centre of Jupiter, may be determined. From hence results a simple and exact method of comparing with each other the distances of Jupiter and of the Sun from the earth, a method which antient astronomers could not possess. They only judged of its distance by the time of its revolution; as they estimated those planets to be farthest from us whose period of revolution was the longest.

It may further be observed, that, when Jupiter is in quadrature with the Sun, the earth is farthest out of the line that passes through the centres of the Sun and Jupiter, and therefore the shadow of the planet is then most exposed to our view: but, even then, the body of the planet will hide from us one side of that part of the shadow which is nearest to it, through which the first satellite passes; which is the reason that, though we see the entrance of that satellite into the shadow, or its coming out from that thence, as the earth is situated on the east or west side thereof, we cannot see them both; whereas the other satellites going through the shadow at a greater distance from Jupiter, their ingress and egress are both visible.

The Naturalist's Diary.

Arise, ye winds, 'tis now your time to blow,
And aid the work of Nature. On your wings
The pregnant seeds conveyed shall plant a race
Far from their native soil.

NATURE having perfected her seeds, her next care is to disperse them: the seed cannot answer its purpose while it remains confined in the capsule. After the seeds, therefore, are ripened, the pericarpium opens to let them out; and the opening is not like an accidental bursting, but, for the most part, is according to a certain rule in each plant. What I have always thought very extraordinary—nuts and shells, which we can hardly crack with our teeth, divide and make way for the little tender sprout which proceeds from the kernel. Handling the nut, I could hardly conceive how the plantule was ever to get out of it. There are cases, it is said, in which the seed-vessel, by an elastic jerk, at the moment of its explosion, casts the seeds to a distance[1]. We all, however, know that many seeds (those of the most composite flowers, as of the thistle, dandelion, &c.) are endowed with, what are not improperly called, wings; that is, downy appendages, by which they are enabled to float in the air, and are carried oftentimes, by the wind, to great distances from the plant which produced them. It is the swelling, also, of this downy tuft within the seed-vessel, that seems to overcome the resistance of its coats, and to open a passage for the seed to escape.

Some seeds which are furnished with hooks or spines, attach themselves to the rough coats of ani-

[1] This is particularly instanced in the touch-me-not (*impatiens*), and the cuckoo flower (*cardamine*).

mals, and thus promote their dispersion[1]. Others are contained in berries, and, being swallowed by birds, are again committed, without injury, to the earth, in various places.

It is a curious circumstance, and not generally known, that most of those oaks, which are called spontaneous, are *planted by the squirrel.* This little animal has performed the most essential service to the British navy. A gentleman, walking one day in the woods belonging to the Duke of Beaufort, near Troy House, in the county of Monmouth, his attention was diverted by a squirrel, which sat very composedly upon the ground. He stopped to observe his motions. In a few minutes, the squirrel darted like lightning to the top of a tree, beneath which he had been sitting. In an instant, he was down with an acorn in his mouth, and began to burrow in the earth with his hands. After digging a small hole, he stooped down, and deposited the acorn; then covering it, he darted up the tree again. In a moment he was down with another, which he buried in the same manner. This he continued to do as long as the observer thought proper to watch him. The industry of this little animal is directed to the purpose of securing him against want in the winter; and, as it is probable that his memory is not sufficiently retentive to enable him to remember the spots in which he deposits every acorn, the industrious little fellow, no doubt, loses a few every year. These few spring up, and are destined to supply the place of the parent tree.—Thus is Britain, in some measure, indebted to the industry and bad memory of a squirrel for her pride, her glory, and her very existence![2]

Horse-beans are set by jays and pies, who hide them among the grass and moss, and afterwards,

[1] The common *bur* belongs to this class.
[2] Philosophy of Nature, vol. i, pp. 30, 31.

most probably, forget where they had stowed them. Horse-beans and peas sprang up in Mr. White's field-walks in the autumn, and he attributes the sowing of them to birds. *Bees*, observes the same naturalist, are much the best setters of cucumbers. If they do not happen to take kindly to the frames, the best way is to tempt them by a little honey put on the male and female bloom. When they are once induced to haunt the frames, they set all the fruit, and will hover with impatience round the lights in a morning, till the glasses are opened.

Some seeds lie dormant for a long time, and do not vegetate till the sun and air are admitted. When old beech trees are cleared away (says Mr. White), the naked ground, in a year or two, becomes covered with strawberry plants, the seeds of which must have been in the ground for an age at least. One of the *slidders*, or trenches, down the middle of the Hanger[1], close covered over with lofty beeches, near a century old, is still called *Strawberry Slidder*, though no strawberries have grown there in the memory of man. That sort of fruit did once, no doubt, abound there, and will again, when the obstruction is removed.

The painter and the man of sentiment prefer the autumnal tints assumed by trees, in this month, to all the blossoms of spring, or the lavish beauties of summer; for, now

> The fading many-coloured woods,
> Shade deep'ning over shade, the country round
> Imbrown; a crowded umbrage, dark and dun,
> Of every hue, from wan declining green
> To sooty dark.

The Abbé de Lille, in his beautiful didactic poem of *Les Jardins* (though somewhat indebted to Thomson), has been very happy in describing the variegated appearance of the woods at this season[2]:—

[1] A wood near Selborne, in Hampshire.
[2] *Que de variété, que de pompe, &c.* Chant. II.

What pomp, what vast variety of hues,
The woodland scenes adorn! The purple deep,
Orange, and opal, and carnation bright,
To the rapt eye their rich profusion spread.
Alas! this splendour all bespeaks decay.
Such is the common lot. The north winds soon
Their sylvan spoils will strew along the vales.
The leaf incessant flutters to the ground,
And, flutt'ring, startles such, who musing stray,
Lonely and devious, through the solemn shades.

Hips, haws, sloes, and blackberries, now adorn our hedges; and the berries of the barberry (*berberis vulgaris*), bryony (*tamus communis*), honeysuckle, elder, holly, woody-nightshade, and privet (*ligustrum vulgare*), afford a valuable supply of foods for many of the feathered race, while passing their winter with us.

About the middle of the month, the common martin disappears; and, shortly afterwards, the smallest kind of swallow, the sand-martin, migrates. The Royston or hooded crow (*corvus cornix*) arrives from Scotland and the northern parts of England, being driven thence by the severity of the season. It destroys lambs, and young partridges and moor fowl, and is almost as mischievous as the raven. The woodcock returns, and is found on our eastern coasts. Various kinds of waterfowl make their appearance; and about the middle of the month, wild geese leave the fens, and go to the rye lands, to devour the young corn. Rooks sport and dive in a playful manner, before they go to roost, congregating in large numbers. Stares assemble in the fen countries, in vast multitudes, and, perching on the reeds, render them unfit for thatching, and thus materially injure the property of the farmer.

The ground is covered, about this time, with spiders' webs, crossing the path from shrub to shrub, and floating in the air. This *gossamer* appearance is thus noticed by Mr. White:—'On September 21, 1741, being intent on field diversions, I rose before daybreak: when I came into the inclosures, I found

the stubbles and clover grounds matted all over with a thick coat of cobweb, in the meshes of which a copious and heavy dew hung. About nine, an appearance, very unusual, began to demand our attention; a shower of cobwebs, falling from very elevated regions, and continuing till the close of day. These webs were not single filmy threads, but perfect flakes, or rays; some near an inch broad, and five or six long.'—(*Nat. Hist. of Selborne*, vol. i, pp. 323-4.)

Few flowers are to be seen in this month; the woodbine and some other kinds, however, blow a second time, but they have lost their fine scent[1]. Yet, the *green-house* is now in perfection, and will amply compensate for the deficiency:—this delight of the

[1] The decay of the flowery tribe brings to our recollection some pretty lines, by Montgomery, on plucking a wild rose late in the month of October:—

Thou last pale promise of the waning year,
Poor sickly Rose, what dost thou here?
Why, frail flower! so late a comer,
Hast thou slept away the summer?
Since now, in Autumn's sullen reign,
When every breeze
Unrobes the trees,
And strews their annual garments on the plain,
Awaking from repose,
Thy fairy lids unclose.

* * * *

Last and meanest of thy race,
Void of beauty, colour, grace!
No bee delighted sips
Ambrosia from thy lips;
No spangling dewdrops gem
Thy fine elastic stem;
No living lustre glistens o'er thy bloom,
Thy sprigs no verdant leaves adorn;
Thy bosom breathes no exquisite perfume,
But pale thy countenance as snow,
While, unconcealed below,
All naked glares the threat'ning thorn.

* * *

botanist is thus described in the well-known lines of a favourite poet:—

Unconscious of a less propitious clime,
There blooms exotic beauty, warm and snug,
While the winds whistle and the snows descend.
The spiny *myrtle* with unwith'ring leaf
Shines there and flourishes. The golden boast
Of Portugal and Western India there,
The ruddier *orange* and the paler *lime*,
Peep through their polished foliage at the storm,
And seem to smile at what they need not fear.
Th' *amomum* there with intermingling flow'rs
And *cherries* hangs her twigs. *Geranium* boasts
Her crimson honours; and the spangled beau,
Ficoides, glitters bright the winter long.
All plants of ev'ry leaf that can endure
The winter's frown, if screened from his shrewd bite,
Live there and prosper. Those Ausonia claims,
Levantine regions these; th' Azores send
Their *jessamines*, her jessamine remote
Caffraria; foreigners from many lands,
They form one social shade, as if convened
By magic summons of th' Orphean lyre.

As flowers now decay, and the bees cannot procure any farther support, this is the season for taking the honey. To obtain this precious article, the industrious collectors are destroyed with the fumes of burning brimstone. Various methods have been proposed to save the lives of the bees; but they are found so materially to reduce the profits of the owners, that it will be long before they are generally adopted. Thomson has a fine passage on this subject:—

Ah! see where robbed, and murdered, in that pit
Lies the still heaving hive! at evening snatched,
Beneath the cloud of guilt-concealing night,
And fixed o'er sulphur: while, not dreaming ill,
The happy people, in their waxen cells,
Sat tending public cares, and planning schemes
Of temperance, for winter poor; rejoiced
To mark, full flowing round, their copious stores.
Sudden the dark oppressive steam ascends;
And, used to milder scents, the tender race,

By thousands, tumble from their honied domes,
Convolved, and agonizing in the dust.
And was it then for this you roamed the Spring,
Intent from flower to flower? for this you toiled
Ceaseless the burning Summer-heats away?
For this in Autumn searched the blooming waste,
Nor lost one sunny gleam? for this sad fate?

The taking of wild-fowl commences, by Act of Parliament, on the 1st of October, and the *decoy*-business is at the greatest height about the end of the month. Great numbers of wild ducks and other waterfowl are annually caught in the extensive marsh lands of Lincolnshire in this way. The decoys now in use are formed by cutting *pipes* or tapering ditches, widened and deepened as they approach the water, in various semicircular directions, through the swampy ground, into very large pools, which are sheltered by surrounding trees or bushes, and situated commonly in the midst of the solitary marsh. At the narrow points of these ditches, farthest from the pool, by which they are filled with water, the fowlers place their *funnel* nets: from these, the ditch is covered by a continued arch of netting, supported by hoops, to the desired distance; and all along both sides, skreens formed of reeds are set up, so as to prevent the possibility of the birds seeing the decoy-man; and as these birds feed during the night, all is ready prepared for this sport in the evening.

The fowler, placed on the leeward side, sometimes with the help of his well-trained dog, but always by that of his better-trained tame decoy-ducks, begins the business of destruction. The latter, directed by his well-known whistle, or excited forward by the floating hempseed, which he strews occasionally upon the water, entice all the wild-ducks after them under the netting; and as soon as this is observed, the man, or his dog, as the fitness of opportunity may direct, is from the rear exposed to the view of the birds, by which they are so alarmed, that they dare not offer to return, and are prevented by the nets

from escaping upwards. They, therefore, press forward, in the utmost confusion, to the end of the *pipe*, into the *funnel*, or *purse* nets, there prepared to receive them, while their treacherous guides remain behind in conscious security. Particular spots, or decoys, in the fen countries, are let to the fowlers at a rent of from five to thirty pounds per annum; and Pennant instances a season, in which 31,200 ducks, including teals and wigeons, were sold in London only, from ten of these decoys, near Wainfleet, in Lincolnshire.

The weather in October is peculiarly favourable to the sports of the field; and hunting is now at its height, as little damage is committed on the farmer's grounds after the gathering of the harvest. Fox-hunting is thus described by the poet:—

For now the pack, impatient rushing on,
Range through the darkest coverts one by one;
Trace every spot; while down each noble glade
That guides the eye beneath a changeful shade,
The loit'ring sportsman feels th' instinctive flame,
And checks his steed to mark the springing game.
'Midst intersecting cuts and winding ways
The huntsman cheers his dogs, and anxious strays
Where every narrow riding, even shorn,
Gives back the echo of his mellow horn:
Till fresh and lightsome, every power untried,
The starting fugitive leaps by his side,
His lifted finger to his ear he plies,
And the view-halloo bids a chorus rise
Of dogs quick-mouthed, and shouts that mingle loud
As bursting thunder rolls from cloud to cloud.
With ears erect, and chest of vig'rous mould,
O'er ditch, o'er fence, unconquerably bold,
The shining courser lengthens every bound,
And his strong foot-locks suck the moistened ground,
As from the confines of the wood they pour,
And joyous villages partake the roar. BLOOMFIELD.

The sowing of wheat is generally completed in this month: when the weather is too wet for this occupation, the farmer ploughs up the stubble fields for winter-fallows. Acorns are sown at this season, and the planting of forest and fruit trees takes place.

November.

'IN a garment of changeable green and black; upon his head, a garland of olives with the fruit; in his left hand, bunches of parseneps and turneps; in his right, the sign Sagitarius.'—(*Peacham*, p. 421.)

'November they termed *wint-monat*, to wit, wind-moneth, whereby wee may see that our ancestors were in this season of the yeere made acquainted with blustring Boreas; and it was the ancient custome for shipmen then to shrowd themselves at home, and to give over sea-faring (notwithstanding the littlenesse of their then used voyages) untill blustring March had bidden them well to fare.'—(*Verstegan*, p. 61, 2.)

Now *Monsieur* TERM will come to town,
The lawyer putteth on his gown;
Revenge doth run post-swift on legs,
And's sweet as muscadine and eggs;
And this makes many go to law
For that which is not worth a straw,
But only they their mind will have,
No reason hear, nor counsel crave.

—(*Poor Robin*, 1757.)

Remarkable Days.

1.—ALL SAINTS.

In the early ages of Christianity the word *saint* was applied to all *believers*, as is evident in the use of it by Saint Paul and Saint Luke; but the term was afterwards restricted to such as excelled in Christian virtues. In the Romish church, holy persons canonized by the Pope, are called *saints*; and are invoked and supplicated by the professors of that religion. The church of England instituted this festival in memory of all good men defunct, proposing them as patterns for Christian imitation, but not allowing any prayers to be addressed to them.

Some strange customs are observed by rustics on Allhallow Eve. Young people in the north (according to Mr. Brand) dive for *apples*, catching at them when stuck at one end of a hanging beam, at the other extremity of which is fixed a *lighted candle*, and that with their mouths only, having their hands tied behind their backs; with many other fooleries. Nuts and apples chiefly compose the entertainment; and from the custom of flinging the former into the fire, it has, doubtless, had its vulgar name, of nut-crack night. In Scotland (says Mr. Pennant) young women determine the *figure and size of their husbands*, by drawing CABBAGES, blindfold, on Allhallow Even; and, like the English, they fling nuts into the fire. This last custom is beautifully described by Gay, in his 'Spell:'—

> Two hazel nuts I threw into the flame,
> And to each nut I gave a sweetheart's name;
> This, with the loudest bounce, me more amazed;
> That, in a flame of brightest colour blazed:
> As blazed the nut so may thy passion grow,
> For 'twas thy nut that did so brightly glow.

The burning of nuts is also alluded to in the following pretty lines:—

These glowing nuts are emblems true
Of what in human life we view;
The ill-matched couple fret and fume,
And thus in strife themselves consume;
Or from each other wildly start,
And with a noise for ever part.
But see the happy happy pair,
Of genuine love and truth sincere;
With mutual fondness, while they burn,
Still to each other kindly turn:
And as the vital sparks decay,
Together gently sink away;
Till life's fierce ordeal being past,
Their mingled ashes rest at last.

2.—ALL SOULS.

This festival is still observed by the church of Rome. The following is the alleged origin of it: A monk, having visited Jerusalem, and passing through Sicily, as he returned home, had the curiosity to visit Mount Ætna, which, from its constantly giving out fire and smoke, was imagined by some to be the mouth of the infernal regions. This same religious monk, hearing the demons within complaining that many departed souls were taken out of their hands by the prayers of the Cluniac monks; on his return, he related this idle story to Odilo his abbot, who immediately appointed this day to be annually observed in the monastery, and incessant prayers to be made for departed souls. The day was soon afterwards solemnized as a general holiday, by the pope; but it was deservedly abolished at the reformation. In Catholic countries, on the eve and day of All Souls, the churches are hung with black; the tombs are opened; a coffin covered with black, and surrounded with wax lights, is placed in the nave of the church; and in one corner, figures in wood, representing the souls of the deceased, are half-way plunged into the flames.

5.—KING WILLIAM LANDED.

The glorious revolution of 1688 is commemorated on this day; when the throne of England became

vested in the illustrious house of Orange. The fleet which brought over King William from Holland left that country on the 1st of November: the remaining narrative of this interesting event is thus related by Bishop Burnet. 'On the third we passed between Dover and Calais, and, before night, saw the Isle of Wight. The next day, the fourth, being the day on which the Prince was both born and married, he fancied, if he could land that day, it would look auspicious to the army, and animate the soldiers. But others, who considered the day following was Gunpowder Treason Day, thought our landing that day might have a good effect on the minds of the English nation. And Divine Providence so ordered it, that, after all hopes of our landing at Torbay were given up, and Russel bid me go to my prayers, for all was lost, the wind suddenly shifted, and carried us into the desired haven. Here the Prince, Marshal Schomberg, and the foot soldiers, landed on November the fifth. I never found a disposition to superstition in my temper; yet I must confess this strange ordering of the winds and seasons, just to change as our affairs required it, could not but make deep impressions on me.' Although King William landed on the fifth of November, the almanacks still continue the mistake of marking it as the *fourth*.

5.—POWDER PLOT.

"We are now to relate an event, one of the most memorable that history has conveyed to posterity, and containing at once a singular proof both of the strength and weakness of the human mind; its widest departure from morals and most steady attachment to religious prejudices. 'TIS THE GUNPOWDER TREASON OF WHICH I SPEAK; A FACT AS CERTAIN AS IT APPEARS INCREDIBLE.'—(*Hume*, vol. vi, p. 30.)

The Catholics, disappointed in their expectations of favour from James I, were enraged beyond all measure. Catesby, a person of that persuasion, first thought of an extraordinary method of revenge,

which was no other than to blow up the parliament house, when the members should be assembled, and the king opening the session. This diabolical scheme be communicated to Percy, a descendant of the illustrious house of Northumberland, who, being charmed with the measure, they cautiously inlisted some other conspirators, and sent over to Flanders in quest of one Guy Fawkes, an officer in the Spanish service, of whose zeal and resolution they entertained no doubt. Every thing being concerted, the conspirators took the following oath of secrecy, which they confirmed by receiving the sacrament together: '*You shall swear by the Blessed Trinity, and by the sacrament you now purpose to receive, never to disclose, directly or indirectly, by word or circumstance, the matter that shall be proposed to you to keep secret, nor desist from the execution thereof until the rest shall give you leave!*' They next (1605) hired a house in the name of Percy, adjoining that in which the parliament assembled; and finding that a cellar was to be let under the house of lords, they seized the opportunity of renting it, and, forming a communication between Percy's house and it, deposited there thirty-six barrels of gunpowder, which they covered with faggots and billet wood. The doors of the vault were then boldly thrown open, to prevent any appearance of danger; and nothing remained, but to watch the opportunity of rendering their horrible malice complete.

The king, the queen, and prince Henry, were all expected to be present at the opening of parliament; but prince Charles, on account of his tender age, would necessarily be absent, and him it was intended to assassinate. The princess Elizabeth alone remained of the royal family whom papistical vengeance had not devoted; and it was resolved to seize her, and proclaim her queen immediately after the catastrophe.

'The day, so long wished for, now approached, on which the parliament was appointed to assemble. The dreadful secret, though communicated to above

twenty persons, had been religiously kept, during the space of near a year and a half. No remorse, no pity, no fear of punishment, no hope of reward, had, as yet, induced any one conspirator either to abandon the enterprise, or make a discovery of it. The holy fury had extinguished in their breast every other motive; and it was an indiscretion at last, proceeding chiefly from these very bigoted prejudices and partialities, which saved the nation.

'Ten days before the meeting of parliament, Lord Monteagle, a catholic, son to Lord Morley, received the following letter, which had been delivered to his servant by an unknown hand. *My lord, Out of the love I bear to some of your friends, I have a care of your preservation. Therefore I would advise you, as you tender your life, to devise some excuse to shift off your attendance at this parliament. For God and man have concurred to punish the wickedness of this time. And think not slightly of this advertisement; but retire yourself into your country, where you may expect the event in safety. For though there be no appearance of any stir, yet, I say, they will receive a terrible blow this parliament, and yet they shall not see who hurts them. This counsel is not to be contemned, because it may do you good, and can do you no harm: For the danger is past, as soon as you have burned the letter. And I hope God will give you the grace to make good use of it, unto whose holy protection I commend you.*

'Monteagle knew not what to make of this letter; and though inclined to think it a foolish attempt to frighten and ridicule him, he judged it safest to carry it to Lord Salisbury, secretary of state. Though Salisbury, too, was inclined to pay little attention to it, he thought proper to lay it before the king, who came to town a few days after. To the king it appeared not so light a matter; and from the serious earnest style of the letter, he conjectured that it implied something dangerous and

important. A *terrible blow*, and yet *the authors concealed;* a danger so *sudden*, and yet so *great;* these circumstances seemed all to denote some contrivance by gunpowder; and it was thought advisable to inspect all the vaults below the houses of parliament. This care belonged to the Earl of Suffolk, lord chamberlain, who purposely delayed the search till the day before the meeting of parliament. He remarked those great piles of wood and faggots which lay in the vault under the upper house, and he cast his eye upon Fawkes, who stood in a dark corner, and passed himself for Piercy's servant. That daring and determined courage, which so much distinguished this conspirator, even among those heroes in villany, was fully painted in his countenance, and was not passed unnoticed by the chamberlain. Such a quantity also of fuel, for the use of one who lived so little in town as Piercy, appeared a little extraordinary; and, upon comparing all circumstances, it was resolved that a more thorough inspection should be made. About midnight, Sir Thomas Knevet, a justice of peace, was sent with proper attendants; and before the door of the vault finding Fawkes, who had just finished all his preparations, he immediately seized him, and, turning over the faggots, discovered the powder. The matches and every thing proper for setting fire to the train were taken in Fawkes's pocket; who finding his guilt now apparent, and seeing no refuge but in boldness and despair, expressed the utmost regret that he had lost the opportunity of firing the powder at once, and of sweetening his own death by that of his enemies. Before the council he displayed the same intrepid firmness, mixed even with scorn and disdain; refusing to discover his accomplices, and showing no concern but for the failure of the enterprise. This obstinacy lasted two or three days: but being confined to the Tower, left to reflect on his guilt and danger, and the rack being just shown to him, his courage, fatigued with

so long an effort, and unsupported by hope or society, at last failed him; and he made a full discovery of all the conspirators.

'Catesby, Piercy, and the other criminals, who were in London, though they had heard of the alarm taken at a letter sent to Monteagle; though they had heard of the chamberlain's search; yet were resolved to persist to the utmost, and never abandon their hopes of success. But at last, hearing that Fawkes was arrested, they hurried down to Warwickshire; where Sir Everard Digby, thinking himself assured that success had attended his confederates, was already in arms, in order to seize the princess Elizabeth. She had escaped into Coventry; and they were obliged to put themselves on their defence against the country, who were raised from all quarters, and armed, by the sheriff. The conspirators, with all their attendants, never exceeded the number of eighty persons; and being surrounded on every side, could no longer entertain hopes either of prevailing or escaping. Having therefore confessed themselves, and received absolution, they boldly prepared for death, and resolved to sell their lives as dear as possible to the assailants. But even this miserable consolation was denied them. Some of their powder took fire, and disabled them for defence. The people rushed in upon them. Piercy and Catesby were killed by one shot. Digby, Rookwood, Winter, and others, being taken prisoners, were tried, confessed their guilt, and died, as well as Garnet, by the hands of the executioner. Notwithstanding this horrid crime, the bigoted catholics were so devoted to Garnet, that they fancied miracles to be wrought by his blood; and in Spain he was regarded as a martyr.

'The lords Mordaunt and Stourton, two catholics, were fined, the former ten thousand pounds, the latter four thousand, by the star-chamber; because their absence from parliament had begotten a suspicion of their being acquainted with the conspiracy. The

Earl of Northumberland was fined thirty thousand pounds, and detained several years prisoner in the Tower; because, not to mention other grounds of suspicion, he had admitted Piercy into the number of gentlemen pensioners, without his taking the requisite oaths.'—(*Hume's Hist. of England*, vol. vi, pp. 33-38, 8vo ed. 1802.)

6.—SAINT LEONARD.

Leonard, or *Lienard*, was a French nobleman of great reputation in the court of Clovis I; he was instructed in divinity by Remigius, Bishop of Rheims, and afterwards made Bishop of Limosin. He procured a license from Clovis, that all prisoners whom he thought proper to visit should be immediately discharged. And for that reason, when he heard of any persons who were imprisoned on account of their religion, or for any other cause that deserved his compassion, he immediately gave them liberty, by his majesty's commission. Several miraculous stories are told of him by the monks, not worth relating. He died about the year 559, and has always been implored by prisoners as their guardian saint.

9.—LORD MAYOR'S DAY.

The word *mayor*, if we adopt the etymology of Verstegan, comes from the antient English *maier*, able or potent, of the verb *may* or *can*. King Richard I, A.D. 1189, first changed the bailiffs of London into Mayors; by whose example, others were afterwards appointed. The order of the *procession* in the city of London, on Lord Mayor's Day, is well described in the following parody of a speech in Shakspeare's Henry V:—

——— suppose that you have seen
The new-appointed MAYOR at QUEEN-STAIRS
Embark his royalty: his own company
With silken streamers the young gazers pleasing,
Painted with different fancies;—have beheld
Upon the golden galleries music playing,
And the horns echo, which do take the lead

Of other sounds :—now view the *city-barge*
Draw its huge bottom through the furrowed *Thames*,
Breasting the adverse surge : O do but think
You stand in TEMPLE-GARDENS, and behold
London herself on her proud stream afloat,
For so appears this fleet of Magistracy
Holding due course to WESTMINSTER.

Here the Lord Mayor lands, and proceeds to the Exchequer to be sworn; after this, he returns by water, and disembarks at Blackfriars. The cavalcade advances to Guildhall amidst admiring crowds of citizens, their wives, and children.

11.—SAINT MARTIN.

He was a native of Hungary, and for some time followed the life of a soldier; but afterwards took orders, and was made Bishop of Tours, in France, in which see he continued for twenty-six years. Martin died about the year 397, much lamented, and highly esteemed for his virtues. Formerly, a universal custom prevailed of killing cows, oxen, swine, &c. at this season, which were cured for winter consumption; as fresh provisions were seldom or never to be had during the dreary months which succeed November. This practice is yet retained in some country villages. Martinmas is still celebrated on the Continent by good eating and drinking; and was antiently, in England, a day of feasting and revelry, as will appear by some extracts from a pleasing little ballad, entitled Martilmasse-day :—

It is the day of Martilmasse,
Cuppes of ale should freelie passe.
What though wynter has begunne
To push downe the summer sunne,
To our fire we can betake,
And enjoye the crackling brake ;
Never heedinge wynter's face
On the day of Martilmasse.

* * *

Some do the citie now frequent,
Where costlie shows and merriment
Do weare the vaporish ev'ninge out
With interlude and revellinge rout;

Such as did pleasure Englande's queene,
When here her royal Grace was seen;
Yet will they not this daye let passe,
The merrie daye of Martilmasse.

* * * *

When the dailie sportes be done,
Round the market crosse they runne;
Prentis laddes, and gallant blades,
Dancing with their gamesome maids,
Till the *beadel*, stout and sowre,
Shakes his bell, and calls the houre;
Then farewell ladde and farewell lasse
To th' merry night of Martilmasse.

Martilmasse shall come againe,
Spite of wind and snow and raine;
But many a strange thing must be done,
Many a cause be lost and won,
Many a tool must leave his pelfe,
Many a worldlinge cheate himselfe,
And many a marvel come to passe,
Before return of Martilmasse.

13.—SAINT BRITIUS.

Britius, or Brice, succeeded St. Martin in the bishopric of Tours in the year 399. He died in 444.

17.—SAINT HUGH.

Our saint was a native of Burgundy, or Gratianopolis. At first he was only a regular canon, but afterwards a Carthusian monk, and at length, through the favour of King Henry II, was constituted Bishop of Lincoln. In this see he obtained great fame, not only for his extraordinary austerity of life, and excellent economy, but for his rebuilding the cathedral from the foundation. Hugh died on this day, in the year 1200, of an ague. In 1220, he was canonized at Rome, and his remains were taken up October 7, 1282, and deposited in a silver shrine. The monks relate many strange stories of him; one of which is too remarkable to be passed over in silence. Hugh coming one day to Godstow, a celebrated nunnery near Oxford, saw a hearse in the middle of the choir, covered with silk, and a great number of tapers burning round it, as was usual after the inter-

ment of distinguished persons: he immediately inquired who was buried there; and, being informed that it was the celebrated Fair Rosamond, a mistress of King Henry II, who had procured several valuable privileges for their house, he immediately ordered her body to be dug up, saying it was a place too sacred for such a person. He also had the corpse removed into the open churchyard, where her monument was to be exposed to public view, to deter other women from following so dissolute and dishonourable a life.

20.—EDMUND, KING AND MARTYR.

Edmund, king of the East-Angles, having been attacked by the Danes in 870, and unable to resist them, heroically offered to surrender himself a prisoner, provided they would spare his subjects. The Danes, however, having seized him, used their utmost endeavours to induce Edmund to renounce his religion; but refusing to comply, they first beat him with clubs, then scourged him with whips, and afterwards, binding him to a stake, killed him with their arrows. His body was buried in a town, where Sigebert, one of his predecessors, had built a church; and where afterwards (in honour of his name) a more spacious building was erected, which together with the town was named St. Edmunds-bury; but it is now called *Bury*.

22.—SAINT CECILIA.

Cecilia was a Roman lady, who, refusing to renounce her religion, was thrown into a furnace of boiling water, and scalded to death. Others say that she was stifled in a bath, a punishment frequently inflicted, at that time, on female criminals of rank. She suffered martyrdom about the year 225. Cecilia is regarded as the patroness of music, and is represented by Raffaelle with a regal in her hand. All the adoration of this saint seems to have arisen from the tradition of her being a skilful musician, and that an

angel who visited her was drawn from the mansions of the blessed by the charms of her melody; a circumstance to which Dryden has alluded in the conclusion of his celebrated Ode to Cecilia:—

Music the fiercest grief can charm,
And fate's severest rage disarm;
Music can soften pain to ease,
And make despair and madness please;
Our joys below it can improve,
And antedate the bliss above.
This the divine CECILIA found,
And to her Maker's praise confined the sound,
When the full organ joins the tuneful quire,
Th' immortal powers incline their ear;
Borne on the swelling notes, our souls aspire,
While solemn airs improve the sacred fire;
And angels lean from heaven to hear. POPE.

At last divine CECILIA came,
Inventress of the vocal frame;
The sweet enthusiast from her sacred store
Enlarged the former narrow bounds,
And added length to solemn sounds,
With nature's mother wit, and arts unknown before.
DRYDEN.

23.—SAINT CLEMENT.

Clement I was born at Rome, and was one of the first bishops of that place; this see he held about sixteen years; from the year 64 or 65 to 81. He was remarkable for having written two Epistles, so excellent, and so highly esteemed by the primitive Christians, that the first was for some time considered canonical. Clement was sentenced to work in the quarries, and afterwards, having an anchor fastened about his neck, was drowned in the sea.

23.—O. MART.

Old Martinmas-Day, an antient quarter day.

25.—SAINT CATHERINE.

Our saint was born at Alexandria, and received a liberal education. About the year 305, she was converted to Christianity, which she afterwards professed with

the utmost intrepidity, openly reproving the pagans for offering sacrifices to their idols, and upbraiding the Emperor Maxentius, to his face, with the most flagrant acts of tyranny and oppression. She was condemned to suffer death by rolling a wheel over her body stuck round with iron spikes.—*Catherine Tide* is very generally observed in Wiltshire and parts adjacent, where it is supposed to be kept in honour of a certain *bonne vivante* queen, a namesake of the saint to whom this day is dedicated.

27.—ADVENT SUNDAY.

This and the three subsequent Sundays, which precede the grand festival of Christmas, take their name from the Latin *advenire*, to come into, or from the word *adventus*, an approach. These Sundays and the week days which follow are set apart by the church of England, to prepare the minds of Christians for the proper celebration of our Saviour's Nativity; in the same manner as *Lent* is intended to introduce the Feast of the Resurrection. Hence some old ecclesiastical writers have termed Advent *altera quadragesima*, another Lent.

30.—SAINT ANDREW.

Andrew was the son of James, a fisherman at Bethsaida, and younger brother of Peter. At the dispersion of the apostles, the province assigned to Saint Andrew was that part of the world then distinguished by the name of Scythia, and its neighbouring countries. Having travelled in these parts, and converted many to the Christian faith, he returned and preached the gospel in Epirus. After he had planted Christianity in several places, he came to Patræ, a city of Achaia, where Ægeus the proconsul, enraged at his undauntedly publishing the doctrines of Christ, condemned him to be crucified on a cross, of the form of an X; and, that his death might be more lingering, he was fastened with cords.

Astronomical Occurrences.

Construction of the Heavens.

There are spots in the heavens called *Nebulæ*, some of which consist of clusters of telescopic stars; others appear as luminous spots of different forms. The most considerable is one in the midway between the two stars on the blade of Orion's sword, marked θ by Bayer; discovered in the year 1656, by the celebrated Huygens: it contains only seven stars, and the centre part is a bright spot upon a dark ground, and appears like an opening into brighter regions beyond. Dr. Halley, and others, have discovered nebulæ in different parts of the heavens. In the *Connoissance des Temps* for 1783 and 1784, there is a catalogue of 103 nebulæ observed by Messier and Mechain. But to Dr. Herschel we are indebted for catalogues of 2000 nebulæ and clusters of stars which he himself discovered. Some of them form a round compact system; others are more irregular, of various forms; and some are long and narrow. The globular systems of stars appear thicker in the middle than they would do if the stars were all at equal distances from each other; they are, therefore, condensed towards the centre. That stars should be thus accidentally disposed is too improbable a supposition to be admitted; he supposes, therefore, that they are brought together by their mutual attractions, and that the gradual condensation towards the centre is a proof of a central power of such a kind. The doctor observes, also, that there are some additional circumstances in the appearance of extended clusters, and nebulæ, that very much favour the idea of a power lodged in the brightest part; for though the form of them be not globular, it is plain that there is a tendency to sphericity. As the stars in the same nebulæ must be very nearly all at the same relative distances from us, and as they appear nearly of the same size, their real magnitudes must be nearly equal. Granting, therefore, that these nebulæ and

clusters of stars are formed by mutual attraction, Dr. Herschel concludes that we may form some judgment of their relative age by the disposition of their component parts, those being the oldest which are most compressed. He offers powerful arguments to prove that the milky way is the nebulæ, of which our Sun is one of the component parts.—See *Phil. Trans.*, vols. lxxvi and lxxix.

This illustrious astronomer has also discovered other phenomena in the heavens, which he calls *nebulous* stars; that is, stars surrounded with a faint, luminous atmosphere of large extent. Those which have been thus styled by other astronomers, he says, ought not to have been so called; for, on examination, they have proved to be either mere clusters of stars plainly to be distinguished by his large telescopes, or such nebulous appearances as might be occasioned by a multitude of stars at a vast distance. The milky way consists entirely of stars, and he says, 'I have been led on by degrees from the most evident congeries of stars to other groups in which the lucid points were smaller, but still very plainly to be seen; and from them to such wherein they could barely be suspected, until I arrived, at last, to spots in which no trace of a star was to be discerned. But, then, the gradation to these latter were by such connected steps, as left no room for doubt but that all these phenomena were equally occasioned by stars variously dispersed in the immense expanse of the universe.'

In the same paper from which we have extracted the foregoing passage is given an account of some nebulous stars, one of which is thus described; 'Nov. 13, 1790. A most singular phenomenon! a star of the eighth magnitude, with a faint luminous atmosphere of a circular form, and about 3′ in diameter. The star is perfectly in the centre, and the atmosphere is so diluted, faint and equal throughout, that there can be no surmise of its consisting of stars, nor can there be a doubt of the evident connection

between the atmosphere and the star. Another star not much less in brightness, and in the same field of view with the above, was perfectly free from any such appearance.' Hence the doctor draws the following consequences: Granting the connection between the star and the surrounding nebulosity, if it consist of stars very remote which gives the nebulous appearance, the central star, which is visible, must be immensely greater than the rest; or, if the central star be no bigger than common, how extremely small and compressed must be those other luminous points which occasion the nebulosity! As, by the former supposition, the luminous central point must far exceed the standard of what we call a star; so, in the latter, the shining matter about the centre will be too small to come under the same denomination; we, therefore, either have a central body which is not a star, or a star which is involved in a shining fluid, of a nature totally unknown to us. This last opinion Dr. Herschel adopts. Light reflected from the star could not be seen at this distance: besides, the outward parts are nearly as bright as those near the star. Moreover, a cluster of stars will not so completely account for the milkiness or soft tint of the light of these nebulæ, as a self-luminous fluid. 'What a field of novelty,' says Dr. Herschel, 'is here opened to our conceptions! A shining fluid, of a brightness sufficient to reach us from the regions of a star of the 8th, 9th, 10th, 11th, or 12th magnitude, and of an extent so considerable as to take up 3, 4, 5, or 6 minutes in diameter.' He conjectures that this shining fluid may be composed of the light perpetually emitted from millions of stars.—See *Phil. Trans.*, vol. lxxxi.

According to the theory of Dr. Herschel, the universe consists of nebulæ, or innumerable collections of innumerable stars, each individual of which is a Sun not only equal, but much superior, to ours, at least if the assertion of Mr. Nicholson has any weight; for he tells us, that 'each individual Sun is destined

to give light to hundreds of worlds that revolve about it, but which can no more be seen by us, on account of their great distance, than the solar planets can be seen from the fixed stars: yet,' he adds, 'as in this unexplored, and, perhaps, unexplorable, abyss of space, it is no necessary condition that the planets should be of the same magnitudes as those belonging to our system, it is not impossible but that planetary bodies may be discovered among the double and triple stars.'

Though we meet, in Dr. Herschel's papers, with the terms *condensation, clusters*, &c. we are by no means from thence to infer that any of the celestial bodies in our nebula are nearer to one another than we are to Sirius, whose distance is supposed not to be less than 400,000 times that of the Sun from us, or 38 millions of millions of miles. The whole extent of the nebula being in some places nearly 500 times as great, must be such, that the light of a star placed at its extreme boundary, supposing it to travel with the velocity of 12 millions of miles every minute, must have taken nearly 3000 years to reach us. Dr. Herschel does not think that our nebula is the most considerable in the universe. 'As we are used,' he says, 'to call the appearance of the heaven, where it is surrounded with a bright zone, the milky way, it may not be amiss to point out some other very remarkable nebulæ, which cannot well be less, but are probably much larger, than our own system; and, being also extended, the inhabitants of the planets that attend the stars which compose them, must perceive the same phenomena: for which reason they may also be called *milky-ways*, for the sake of distinction.' [This curious subject we may resume hereafter.]

The Sun's rising and setting is given for the three following days:—

Tuesday,	1st, Sun rises 12 m. past 7.	Sun sets at 48 m. past 4
Friday,	11th, - - 29 - - 7 - - -	31 - - 4
Monday,	21st - - 44 - - 7 - - -	16 - - 4

Equation of Time.—The following table will serve to adjust the clock or watch to true or equal time, by subtracting a certain number of minutes and seconds from apparent time:—

			m.	s.
Tuesday,	1st,	from the time shown by the dial SUBTRACT	16	14
Sunday,	6th,	- - - - - - - - - - - - - - -	16	11
Friday,	11th,	- - - - - - - - - - - - - - -	15	48
Wednes.	16th,	- - - - - - - - - - - - - - -	15	3
Monday,	21st,	- - - - - - - - - - - - - - -	13	57
Saturday,	26th,	- - - - - - - - - - - - - - -	12	32

The Sun enters the sign Sagittarius at 24 m. after 9 in the evening of the 22d.

The Moon enters its last quarter at 4 m. past 7 on the 4th: the change or new Moon occurs at 15 m. past 1 in the morning of the 12th. This enters its first quarter at 16 m. past 5 in the morning of the 20th; and the Moon is at the full 52 m. past 11 in the forenoon of the 27th.

The time of the Moon's rising for the first five days after the full on the 28th of October, and also after that on the 27th of November, is as follows:—

Oct. and Nov.				*Nov. and Dec.*			
Oct.	30th,	11 m. after	6	Nov.	28th,	18 m. after	5
	31st,	46	6		29th,	11	6
Nov.	1st,	32	7		30th,	16	7
	2d,	30	8	Dec.	1st,	29	8
	3d,	36	9		2d,	46	9

On the 25th, the Moon will eclipse the star μ Ceti: the immersion will take place 49 m. past 4 in the afternoon, and the emersion 46 m. past 5: when the eclipse begins, the star will be nearly one minute north of the Moon's centre, and at the end it will be $2\frac{1}{2}$ south. On the 9th, the planet Jupiter will eclipse η ♍; and on the 25th, Mars will eclipse λ ♍.

Mercury's inferior conjunction will be at 8 o'clock in the evening of the 27th. The Georgian planet will be in conjunction with the Sun at 2 in the afternoon on the 25th.

There will be an eclipse of the first satellite of Ju-

piter visible at Greenwich 1 m. past 5 in the morning of the 5th day; and one of the second satellite on the 21st, at 56 m. past 4 in the morning. This time, in both cases, refers to the immersions or commencement of the eclipse.

VIEW OF THE SOLAR SYSTEM.

Of Saturn.

Saturn is a very conspicuous planet, though never so brilliant as Jupiter. The period of his revolution is 10,759 days, or almost 30 years. He moves from west to east nearly in the plane of the ecliptic, and exhibits many irregularities similar to those of Jupiter and Mars. He becomes retrograde both before and after his opposition, when at the distance of about 109° from the Sun. His retrograde motion continues 139 days, and, during its continuance, he describes an arc of about 6°.

Saturn, when viewed through a good telescope, makes a more remarkable appearance than any of the other planets. Galileo first discovered his uncommon shape, which he thought to be like two globes, one on each side a larger one. Having viewed him for two years, he was surprised to see him become quite round without these appendages, and then afterwards to assume them as before. These adjoining globes were what are now called the *ansæ* of his ring, the true shape of which was first discovered by Huygens, about forty years after Galileo. From the discoveries made by him and other astronomers, it appears that this planet is surrounded by a broad thin ring, the edge of which reflects little or none of the Sun's light to us, but the planes of the ring reflect the light in the same manner that the planet itself does; and, if we suppose the diameter of Saturn to be divided into three equal parts, the diameter of the ring is about seven of those parts. The ring is detached from the body of Saturn in such a manner, that the distance

between the innermost part of the ring and the body is equal to its breadth. Both the outward and inward rim of the ring is projected into an ellipse, more or less oblong according to the different degrees of obliquity with which it is viewed. Sometimes the eye of the observer is in the plane of the ring, and then it becomes invisible; either because the outward edge is not fitted to reflect the Sun's light, or because it is too thin to be seen at such a distance. As the plane of this ring keeps always parallel to itself, it disappears twice in every revolution of the planet; that is, once in about 15 years, and he sometimes appears quite round for nine months together. At other times, the distance between the body of the planet and the ring is very perceptible, so much so, that a star has been seen through the opening. When Saturn appears round, if our eye be in the plane of the ring, it will seem as a dark line across the middle of the planet's disk; and, if the eye be elevated above the plane of the ring, a shadowy belt will be visible, which is caused by the shadow of the ring, as well as by the interposition of part of it between the eye and the planet.

The shadow of the ring is broadest when the Sun is most elevated, but its obscure parts appear broadest when the eye is most elevated above the plane of it. When it seems to be double, the ring next the body of the planet appears brightest; when the ring appears of an elliptical form, the parts about the ends of the largest axis are called *ansæ*, as has been already mentioned. These, a little before and after the disappearing of the ring, are of unequal magnitude: the largest ansa is longer visible before the planet's round phase, and it appears again sooner than the other. On the 1st of October, 1714, the largest ansa was on the east side, and on the 12th on the west side of the disk of the planet, which makes it probable that the ring has a rotation round an axis. Dr. Herschel has shown that it revolves in its own plane in about 10½ hours,

The observations of this philosopher have added greatly to our knowledge of Saturn's ring. According to him, there is one single, dark, considerable broad line, belt or zone, which he has constantly found on the north side of the ring. As this dark belt is subject to no change whatever, is is probably owing to some permanent construction of the surface of the ring: this construction cannot be owing to the shadow of a chain of mountains, since it is visible all round on the ring, for there could be no shade at the ends of the ring: a similar argument will apply against the opinion of very extended caverns. It is pretty evident that this dark zone is contained between two concentric circles, for all the phenomena correspond with the projection of such a zone. The nature of the ring Dr. Herschel thinks no less solid than that of Saturn itself, and it is observed to cast a strong shadow upon the planet. The light of the ring is also generally brighter than that of the planet; for the ring appears sufficiently bright when the telescope affords scarcely light enough for Saturn. The doctor concludes that the edge of the ring is not flat, but spherical or spheroidical. The dimensions of the ring, or of the two rings with the space between them, Dr. Herschel has given as follows:—

	Miles.
Inner diameter of the smaller ring	146,345
Outside diameter of ditto	184,393
Inner diameter of the larger ring	190,248
Outside diameter of ditto	204,883
Breadth of the inner ring	20,000
Breadth of the outer ring	7,200
Breadth of the vacant space, or dark zone	2,839

The conjectures relative to the nature of this ring have been various. Some persons have imagined that the diameter of the planet Saturn was once equal to the present diameter of the outward ring, and that it was hollow; the present body being contained within the former surface, in some such a manner as a kernel is contained within its shell. They sup-

pose that, in consequence of some concussion, or other cause, the outer shell fell down to the inner body, and left only the ring at the greater distance from the centre. This conjecture is, in some measure, corroborated from the consideration that both the planet and its ring perform their rotations about the same common axis, and in very nearly the same time. Dr. Herschel, from the observations he made on the planet, concludes in the following words: 'It does not appear to me that there is sufficient ground for admitting the ring of Saturn to be of a very changeable nature, and I guess that its phenomena will hereafter be so fully explained as to reconcile all observations. In the mean time, we must withhold a final judgment of its construction, till we can have more observations. Its division into two very unequal parts can admit of no doubt.'

The diameters of Saturn are not equal; they are, probably, in the proportion of about 11 to 10. This form, compared with that of Jupiter, leads one to conclude that Saturn turns rapidly round his shorter axis, and that the ring moves in the plane of his equator. Huygens observed five belts upon this planet nearly parallel to the equator. Besides the ring above mentioned, Saturn has seven satellites or moons continually circulating about him. The orbits of all these satellites, except the fifth, are nearly in the same plane, which makes an angle with the plane of Saturn's orbit of about 31°; and, by reason of their being inclined at such large angles, they cannot pass across their primary, or behind it, with respect to the earth, except when very near their nodes; so that eclipses of them happen much more seldom than of the satellites of Jupiter.

Till the time of Herschel, five satellites only were known as connected with this planet: this astronomer, in the years 1787 and 1788, discovered two others: these are nearer to Saturn than any of the other five, but, to prevent confusion, they were de-

nominated the 6th and 7th satellites. The fifth satellite has been observed to turn once round its axis exactly in the time in which it revolves round Saturn; and, in this respect, it resembles our Moon.

The Naturalist's Diary.

Sad wears the hour! heavy and drear
Creeps, with slow pace, the waning year;
And sullen, sullen, heaves the blast
Its deep sighs o'er the lonely waste!

GLOOMY as this month usually is, yet there are some intervals of clear and pleasant weather: the mornings are, occasionally, sharp, but the hoarfrost is soon dissipated by the Sun, and a fine open day follows. Of November scenery, on the other side of the Tweed, WALTER SCOTT has drawn a pleasing picture; much of it, however, applies equally to more southern regions.

November's sky is chill and drear,
November's leaf is red and sear:
* * *
No longer Autumn's glowing red
Upon our forest hills is shed;
No more beneath the evening beam
Fair Tweed reflects their purple gleam;
Away hath passed the heather bell
That bloomed so rich on Needpath fell;
Sallow his brow, and russet bare
Are now the sister heights of Yare.
The sheep, before which the pinching heaven
To sheltered dale and down are driven,
Where yet some faded herbage pines,
And yet a watery sunbeam shines;
In meek despondency they eye
The withered sward and wintry sky,
And far beneath their summer hill
Stray sadly by Glenkinnon's rill:
The shepherd shifts his mantle's fold,
And wraps him closer from the cold:

His dogs no merry circles wheel,
But, shivering, follow at his heel;
A cowering glance they often cast,
As deeper moans the gathering blast.

The trees are now stripped of their foliage. The separation of the leaves from their branches is termed the *fall*; and, in North America, the season in which this takes place is universally known by that name. The falling of leaves is not always in consequence of the injuries of autumnal frosts, for some trees have their appropriate period of defoliation, seemingly independent of external causes. The lime (*tilia europæa*) commonly loses its leaves before any frost happens; the ash seems, on the contrary, to wait for that event; and at whatever period the first rather sharp frost takes place, all its leaves fall at once. The fall of the leaf can be considered only as a 'sloughing or casting off diseased or worn-out parts,' whether the injury to their constitution may arise from external causes or from an exhaustion of their vital powers. Hence a separation takes place, either in the footstalk, or more usually at its base, and the dying part quits the vigorous one, which is promoted by the weight of the leaf itself, or by the action of autumnal winds upon its expanded form. Sometimes, as in the hornbeam, the beech, and some oaks, the swelling of the buds for the ensuing season is necessary to accomplish the total separation of the old stalks from the insertions.

How fall'n the glories of these fading scenes!
The dusky *beech* resigns his vernal greens;
The yellow *maple* mourns in sickly hue,
And russet woodlands crown the dark'ning view.
Dim, clust'ring fogs involve the country round;
The valley, and the blended mountain ground,
Sink in confusion; but with tempest wing,
Should Boreas from his northern barrier spring,
The rushing woods with deaf'ning clamour roar,
Like the sea tumbling on the pebbly shore:
When spouting rains descend in torrent tides,
See the torn zig-zag weep its channelled sides.

Leaves undergo very considerable changes before they fall: ceasing to grow for a long time previous to their decay, they become gradually more rigid and less juicy, often parting with their pubescence, and always changing their healthy green colour to more or less of a yellow, sometimes a reddish hue[1]. 'One of the first trees that becomes naked is the walnut; the mulberry, horse-chesnut, sycamore, lime, and ash, follow. The elm preserves its verdure for some time longer: the beech and ash are the latest deciduous forest trees in dropping their leaves. All lopped trees, while their heads are young, carry their leaves a long while. Apple-trees and peaches remain green very late, often till the end of November: young beeches never cast their leaves till spring, when the new leaves sprout, and push them off: in the autumn, the beechen leaves turn of a yellow deep chesnut colour.'—(*White.*)

That highly-esteemed fish, the *salmon*, now ascends rivers to deposit its spawn in their gravelly beds, at a great distance from their mouths. In order to arrive at the spots proper for this purpose, there are scarcely any obstacles which the fish will not surmount. They will ascend rivers for hundreds of miles; force themselves against the most rapid streams, and spring with amazing agility over cataracts of several feet in height. They are taken, according to Mr. Pennant, in the Rhine, as high as Basil: they gain the sources of the Lapland rivers, in spite of their torrent-like currents: they surpass the perpendicular falls of Leixlip, Kennerth, and Pont Aberglasslyn. At the latter of these places, Mr. Pennant assures us that he has himself witnessed the efforts of the salmon, and seen

[1] American trees and shrubs in general, and such European ones as are botanically related to them, are remarkable for the rich tints of red, purple, or even blue, which their leaves assume before they fall. Hence the autumnal foliage of the woods of North America is, beyond all imagination, rich and splendid.

scores of fish, some of which succeeded, while others miscarried in the attempt, during the time of observation. At this time, nets or baskets are placed under the fall, and numbers are taken after an unsuccessful leap[1]. It may be added, that the salmon, like the swallow, is said to return, each season, to the self-same spot to deposit its spawn.

The value of this article of life has advanced equally with every kind of food, even in situations where salmon were most abundant. The amazing disproportion in the present price of Severn salmon to that of twenty or thirty years ago, when it was sold from threepence to sixpence per lb., is attributed, in a great degree, to the several weirs (contrary to Act of Parliament) upon the river, constructed so as to prevent the smallest salmon fry from escaping, as they proceed towards the sea. It is a known fact, that the fry have been taken in such quantities, that the captors have been obliged to throw them away. Another mode of incalculable destruction arises from the practice of netting the fords when the water is low, by which means the salmon spawn, deposited upon the sand and gravel, being loosened by the net, is swept away, and becomes food for fish of an inferior quality, such as chub, roach, dace, &c. The above, combined with other causes, such as the speedy conveyance now afforded, not only to the metropolis, but to all

[1] A curious mode of taking this fish, called *salmon-hunting* (as practised at Whitehaven), is mentioned by Mr. Bingley: 'When the tide recedes, what fish are left in the shallows are discovered by the agitation of the water;—the hunter, with a three-pointed barbed spear, fixed to a shaft fifteen feet long, plunges into these pools at a trot, up to the belly of his horse. He makes ready his spear, and, when he overtakes the salmon, strikes the fish with almost unerring aim; that done, by a turn of the hand, he raises the salmon to the surface, wheels his horse towards the shore, and runs the fish on dry land without dismounting. From forty to fifty fish have been killed in a day; ten are, however, no despicable booty.'

parts of the country, have fixed a worth upon the salmon which will not quickly admit of reduction[1].

The stock-dove (*columba œnas*), one of the latest winter birds of passage, arrives from more northern regions, towards the end of this month. Before our beechen woods were destroyed (observes Mr. White), there were myriads of them, reaching in strings for miles together. At this time, twenty have been killed in a day; and an old sportsman assured me, that, with a large fowling-piece, he had shot seven or eight at a time on the wing, as they came wheeling over his head. The food of these numberless emigrants was beech-mast and some acorns, and particularly barley, which they collected in the stubbles; they also eat the young tops of turnips.

The wild pigeons, which migrate in large flocks into England at the approach of winter, build their nests in the hollows of decayed trees, and commonly have two broods in the year. In a state of domestication their increase is prodigious; and, allowing them to breed nine times in the year, the produce of a single pair, at the expiration of four years, may amount (according to Mr. Stillingfleet) to the enormous number of *fourteen thousand seven hundred and sixty-two.* The varieties of the domestic pigeon are very numerous. Of these, the *carrier* pigeon is most worthy of notice, having been made use of, from very early times, to convey intelligence on the most important occasions, and it never fails to execute its commission with unequalled expedition and certainty.

The farmer usually finishes his ploughing this month. Cattle and horses are taken into the farmyard; sheep are sent to the turnip-field; ant-hills are destroyed; and bees are put under shelter.

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[1] In February, 1809, a Severn salmon, weighing nineteen pounds, was sold at Billingsgate for the immense sum of ONE GUINEA *per pound.*

December.

'DECEMBER must be expressed with a horrid and fearful aspect, clad in Irish rugge, or course freeze, girt unto him; upon his head no garland but three or four night-caps, and over them a Turkish turbant; his nose red; his mouth and beard clogd with iseickles; at his back a bundle of holly, ivy, or misletoe, holding in furd mittens the sign of Capricornus.'—(*Peacham*, p. 421.)

'December had his due appellation given him in the name of *winter-monat*, to wit, *winter-moneth*; but after the Saxons received Christianity, they then, of devotion to the birth time of Christ, tearmed it by the name of *heligh-monat*, that is to say, holy-moneth.'—(*Verstegan*, p. 62.)

December, last of months, but best, who gave
A Christ to man, a Saviour to the slave.
While, falsely grateful, man at the full feast,
To do God honour, makes himself a beast. CHURCHILL.

Remarkable Days.

6.—SAINT NICHOLAS.

NICHOLAS was Bishop of Myra in Lycia, and died about the year 392. He was of so charitable a disposition, that he portioned three young women, who were reduced in circumstances, by secretly conveying a sum of money into their father's house. The antient annual ceremony of a boy-bishop (*episcopus puerorum*), on this day, is thus described by SIR JOHN HAWKINS in his elaborate *History of Music*, vol. i, pp. 5-7. 'The boy-bishop was elected from among the choristers of the Cathedral of Sarum, on the anniversary of St. Nicholas, being the sixth day of December: he was invested with great authority, and had the state of a diocesan bishop from the time of his election until Innocents' Day, as it is called, the 28th of the same month. It seems that the original design of this singular institution was to do honour to the memory of St. Nicholas, who, even in his infancy, was remarkable for his piety, and, in the language of St. Paul to Timothy, is said to have *known the scriptures of a child*. Ribadeneyra has given his life at large; but the following extract from the English festival contains as much about him as any reasonable man can be expected to believe. "*It is sayed that his fader hyght Epiphanius, and his moder, Joanna, &c. And whan he was born, &c. they made hym chrysten, and called him Nycholas, that is a mannes name; but he kepeth the name of a chyld; for he chose to kepe vertues, meknes, and symplenes, and without malyce. Also we rede, whyle he lay in his cradel, he fasted Wednesday and Friday: these days he would souke but ones of the day, and therewyth held him plesed. Thus he lyved all his lyf in vertues, with this chyldes name, and therefore chyldren don him worship before all other saynts.*"

'The ceremonies attending the investiture of the

episcopus puerorum are prescribed by the statutes of the church of Sarum, which contain a title, "*de episcopo choristarum;*" and also by the processional. From these it appears, that he was to bear the name and maintain the state of a bishop, habited with a crosier or pastoral staff in his hand, and a mitre on his head. His fellows, the rest of the children of the choir, were to take upon them the stile and office of prebendaries, and yield to the bishop canonical obedience; and, farther, the same service as the very bishop himself, with his dean and prebendaries, had they been to officiate, were to have performed, the very same, mass excepted, was done by the chorister and his canons, upon the eve and the holiday. The use of Sarum required also, that upon the eve of Innocents' Day the chorister bishop, with his fellows, should go in solemn procession to the altar of the Holy Trinity, in copes, and with burning tapers in their hands; and that, during the procession, three of the boys should sing certain hymns mentioned in the rubric. The procession was made through the great door at the west end of the church, in such order that the dean and canons went foremost, the chaplain next, and the bishop with his little prebendaries last; agreeable to that rule in the ordering of all processions, which assigns the rearward station to the most honourable. In the choir was a seat or throne for the bishop; and as to the rest of the children, they were disposed on each side of the choir, upon the uppermost ascent. And so careful was the church to prevent any disorder which the rude curiosity of the multitude might occasion in the celebration of this singular ceremony, that their statutes forbid all persons whatsoever, under pain of the greater excommunication, to interrupt or press upon the children, either in the procession or during any part of the service directed by the rubric; or any way to hinder or interrupt them in the execution or performance of what it concerned them to do. Farther

it appears, that this infant bishop did, to a certain limit, receive to his own use rents, capons, and other emoluments of the church.

'In case the little bishop died within the month, his exequies were solemnized with great pomp; and he was interred, like other bishops, with all his ornaments. The memory of this custom is preserved, not only in the ritual books of the cathedral church of Salisbury, but by a monument in the same church, with the sepulchral effigies of a chorister bishop, supposed to have died in the exercise of his pontifical office, and to have been interred with the solemnities above noted.'

In the statutes of St. Paul's School, framed by its venerable founder, Dean Colet, it is expressly ordered that the scholars '*shall every Childermas* [Innocents] *day, come to Pauli's churche, and hear the* CHYLDE-BISHOP's [of St. Paul's Cathedral] *sermon. And after be at the high masse; and each of them offer a penny to the chylde-bishop, and with them the maysters and surveyors of the Scole!*' This singular custom was abrogated by HENRY VIII, in 1542; but it was restored, by MARY, to all its antient splendour in 1554; and an edict issued by the Bishop of London, to all the clergy in his diocese, to have a *boy-bishop* in procession. On the accession of ELIZABETH, this silly mockery was set aside, we hope, FOR EVER[1].

8.—CONCEPTION OF THE VIRGIN MARY.

This festival was instituted by Anselm, Archbishop of Canterbury, because William the Conqueror's fleet, being in a storm, afterwards came safe to shore. The Council of Oxford, however, held in 1222, permitted every one to use his discretion in keeping it.

[1] The celebration of the *Eton Montem* is supposed by Mr. Brand to be, merely, a modification of this antient ceremony.

13.—SAINT LUCY.

This virgin martyr was born at Syracuse. She refused to marry a young man who paid his addresses to her, because she had determined to devote herself to religion, and, to prevent his importunites, gave her whole fortune to the poor. The youth, enraged at this denial, accused her before Paschasius, the heathen judge, of professing Christianity; and Lucy, after much cruel treatment, fell a martyr to his revenge, in the year 305.

16.—O SAPIENTIA.

This is the beginning of an anthem in the Latin service to the honour of Christ's advent, which used to be sung in the church from this day until Christmas Eve.

21.—SAINT THOMAS THE APOSTLE.

Thomas, surnamed *Didymus*, or the Twin, was a Jew, and in all probability a Galilean. There are but few passages in the gospel concerning him. After our Lord's ascension, the province assigned to Thomas was Parthia. Jerome says, that he preached the gospel of our Lord to the Parthians, Medes, Persians, Hyrcanians, Bactrians, and Magians, and died in the city of Calamin, in India. Thomas is said to have suffered martyrdom in the same city, being killed by the lances of some people instigated by the Bramins.

This is the shortest day, and is at London 7 h. 44 m. 17 s., allowing 9 m. 5 s. for refraction.

Shortest of all the varying days,
'That fill the circling round of Time,'
Expectance views the Sun's bright rays,
Advancing from the southern clime;
Stern Winter frowns to see his sway,
His icy sceptre melt away,
Before the milder skies.

25.—CHRISTMAS DAY.

The feast of our Saviour's nativity was undoubtedly celebrated in the early ages of Christianity; for we are told that under the persecution of Maximinus, that

emperor burnt a church at Nicomedia, which was filled with Christians assembled to keep this festival St. Gregory terms it the *festival of festivals*; and St. Chrysostom, the *chief of all festivals*. It is named *Christmas-day*, from the Latin *Christi Missa*, the Mass of Christ, and thence the Roman Catholic Liturgy is termed their *Missal* or *Mass-Book*. About the year 500, the observation of this day became general in the Catholic church.

In the primitive church, Christmas-day was always preceded by an Eve or vigil. When the devotion of the Eve was completed, our forefathers used to light up candles of an uncommon size, which were called Christmas candles, and to lay a log of wood upon the fire called the *yule-clog* or log. A kind of baby or little image intended to represent Jesus, and called the *yule-dough*, was formerly made at this season, and presented by the bakers to their customers; and in some parts of the northern counties, the people, after service on Christmas-day, cry *Ule, ule, ule*, as a token of rejoicing; the lower orders running about the streets, vociferating,

Ule, ule, ule, ule,
Three puddings in a pule,
Crack nuts and cry Ule.

From the following circumstance may be dated the origin of *Christmas-boxes*, now almost forgotten. The Romish priests had masses said for almost every thing. When a ship went on a voyage, the priests had a box in her under the protection of some saint, and the poor were desired to contribute to this box, that masses might be said for them. This treasury was not to be opened until the ship's return. The mass, at that time, was called Christmas; the box, *Christmas-box*, or money collected against that time, that the priests might say masses to the saints, and entreat the forgiveness of the debaucheries of the people at this season; and from this, servants had the liberty to get box-money, that they, too, might

be enabled to pay the priest for his masses, knowing well the old proverb, 'No penny, no paternoster.'

A *thrift-box*, as it is vulgarly called (says Mr. Brand), is still retained in barbers' shops in the North, being put against the wall, and every customer contributing. The Christmas-box is thus mentioned by Mr. Gay:—

> Some boys are rich by birth beyond all wants,
> Beloved by uncles, and kind good old aunts:
> When time comes round, a *Christmas-box* they bear,
> And one day makes them rich for all the year.

The *Carols*, formerly sung at this season of the year, were festal chansons for enlivening the merriments of the Christmas celebrity; and not such religious songs as are current at this day, with the common people, under the same title, and which were substituted by those enemies of innocent and useful mirth, the Puritans. The BOAR'S-HEAD, soused, was antiently the first dish on Christmas-day, and was carried up to the principal table in the hall, with great state and solemnity, a carol being sung at the time. The old song, with some variations, is yet retained in Queen's College, Oxford, and is sung annually on Christmas-day, when a boar's-head is served up as the principal dish.

The *religious hymn*, which succeeded the festal carol, very much resembled those miserable ditties that are now, annually, *bawled* through the streets of the metropolis at Christmas; and are equally eminent examples of the *art of sinking*, in poetry. Take, as a specimen, the following Scottish carol, printed in 1625:

> I come from hevin to tell
> The best nowellis that ever befell;
> To yow thir tythenges trew I bring,
> And I will of them say and sing.
>
> This day to yow is borne ane chilne,
> Of Marie meike and Virgine mylde,
> That blessit barne bining and kynde,
> Gall yow rejoice baith hert and mind.

My saull and lyfe stand up and see
Quha lyes in ane cribe of tree,
Quhat babe is that so gude and faire?
It is Christ, God's sonne and aire.

O God that made all creature,
How art thou become so pure,
That on the hay and straw will lye,
Among the asses, oxin, and kye?

O my deir hert, young Jesus sweit,
Prepare thy creddil in my spreit,
And I sall rocke thee in my hert,
And never mair from thee depart.

But I sall praise thee ever mair
With sangs sweit, unto thy gloir,
The knees of my hert sall I bow,
And sing that richt halulalow.

Chatterton gives a lively description of CHRISTMAS AS IT WAS, *in olden time*. 'The antient Christmas *gambols*,' says the poet, 'were, in my opinion, superior to our modern spectacles and amusements: wrestling, hurling the ball, and dancing in the woodlands, were pleasures for men. It is true, the conversation of the hearth-side was the tales of superstition: the fairies, Robin Goodfellow, and hobgoblins, never failed to make the trembling audience utter an avemaria, and cross their chins; but the laughable exercises of blindman's buff, riddling, and question and command, sufficiently compensated for the few sudden starts of terror. Add to these amusements the wretched voices of the chanters and sub-chanters; howling carols in Latin; the chiming of consecrated bells; the burning consecrated wax candles; curiously representing the Virgin Mary; praying to the saint whose monastery stood nearest; the munching consecrated cross-leaves sold by the monks; all which effectually eradicated the spectres of their terrific stories. Nor were these the only charms against the *foul fiends* and *nightmare*; sleeping cross-legged, like the effigies of Knights Templars and warriors, and the holy bush and church-yard yew, were certain antidotes against those invisible beings.

'The great barons and knights generally kept open

houses during this season, when their villains or vassals were entertained with bread, beef, and beer, and a pudding, wastol-cake, or Christmas kitchel, and a groat in silver at parting; being obliged to wave the full flagon round their heads, in honour of the master of the house. Plays were performed by the monks; the plot being, generally, the life of some Pope, or the founder of the abbey to which the monks belonged. Private exhibitions at the manors of the barons were usually family histories; minstrels, jesters, and mummers, composed the next class of performers, who were maintained in the castle of the baron, to entertain his family. Chaucer thus mentions them:

Doe comme, he saied, myn mynstrales,
And jestours for to tellen us tales,
Anon in mye armyage.
Of Romaunces yatto been royals,
Of Popes and Cardinals,
And eke of love longynge.

The 'Meteor of the North' has painted a vivid but faithful portrait of antient Christmas ceremonies, and with all the minute accuracy and high finishing of a Gerhard Douw:

On Christmas eve the bells were rung;
On Christmas eve the mass was sung;
That only night, in all the year,
Saw the stoled priest the chalice rear.
The damsel donned her kirtle sheen;
The hall was dressed with holly green;
Forth to the wood did merry men go,
To gather in the misletoe.
Then opened wide the baron's hall
To vassal, tenant, serf, and all;
Power laid his rod of rule aside,
And ceremony doffed his pride.
The heir, with roses in his shoes,
That night might village partner choose;
The lord, underogating, share
The vulgar game of 'post and pair.'
All hailed, with uncontrolled delight,
And general voice, the happy night,
That to the cottage, as the crown,
Brought tidings of salvation down.

The fire, with well-dried logs supplied,
Went roaring up the chimney wide;
The huge hall-table's oaken face,
Scrubbed till it shone, the day to grace,
Bore then upon its massive board
No mark to part the 'squire and lord.
Then was brought in the lusty brawn
By old blue-coated serving-man;
Then the grim boar's head frowned on high,
Crested with bays and rosemary.
Well can the green-garbed ranger tell
How, when, and where, the monster fell;
What dogs before his death he tore,
And all the baiting of the boar.
The wassel round in good brown bowls,
Garnished with ribbons, blithely trowls.
There the huge sirloin reeked; hard by
Plum-porridge stood, and Christmas pie;
Nor failed old Scotland to produce,
At such high tide, her savoury goose.
Then came the merry masquers in,
And carols roared with blithesome din:
If unmelodious was the song,
It was a hearty note, and strong.
Who lists may in their mumming see
Traces of ancient mystery,
White shirts supplied the masquerade,
And smutted cheeks the visors made;
But, O! what masquers richly dight
Can boast of bosoms half so light!
England was merry England, when
Old Christmas brought his sports again.
'Twas Christmas broached the mightiest ale;
'Twas Christmas told the merriest tale;
A Christmas gambol oft could cheer
The poor man's heart through half the year.

The present manner of spending Christmas in the North Riding of Yorkshire, still preserves some traces of antiquity. It is customary for a party of *singers*, chiefly women, to commence, at the feast of Saint Martin, a peregrination round the neighbouring villages, carrying with them a small waxen image of our Saviour, adorned with box and other evergreens; at the same time, singing a hymn. This custom is continued till Christmas Eve, when their 'good living'

begins. Every rustic dame produces a cheese, upon which, before any part of it is tasted, rude incisions are made to represent the cross. With this and furmety, made of barley and meal, the cottage affords uninterrupted hospitality. A large fire is made on Christmas Eve, on which the 'yule clogs' are piled, and a fragment of a clog or log is yearly preserved by every prudent housewife[1].

Poor Robin, in his Almanack for 1677, thus notes the culinary preparations for the celebration of Christmas:—

Now grocer's trade
Is in request
For Plums and Spices
Of the best.

Good cheer doth with
This month agree,
And dainty chaps
Must sweetned be.

Mirth and gladness
Doth abound,
And strong beer in
Each house is found.

Minced Pies, roast Beef,
With other cheer
And feasting, doth
Conclude the year.

26.—SAINT STEPHEN.

With reference to this and the two succeeding festivals, it has been aptly observed, that there are three kinds of martyrdom; the first, in will and in deed; the second, in will but not in deed; and the third, in deed but not in will; so our church commemorates these martyrs in the same order. Saint Stephen, therefore, is placed first, as he suffered death both in will and deed: St. John the Evangelist next, as he suffered in will but not in deed: and the Holy Innocents last, who suffered in deed but not in will. The great Saint Stephen, as Saint Gregory calls him, whose temples were bound, in allusion to his name, with the first Στέφανον, or crown of martyrdom, was an early proselyte to Christianity, and a man of singular holiness, being full of the Holy Ghost. He was the first deacon chosen by the apostles. Stephen was cited before the Sanhedrin, or Jewish Council, for prophesying the fall of the Jewish Temple and economy;

[1] Other curious customs on St. Stephen's and New Year's day, will be noticed in the account of those festivals.

and, while vindicating his doctrine by several passages of the Old Testament, he was violently carried out of the city and stoned to death, in the year 33. See *Acts* vii, for his admirable defence.

On the feast of Saint Stephen, in the North Riding of Yorkshire, large *goose pies* are made, all of which are distributed among the poor, except one, which is not tasted till Candlemas Day. On this day, also, six youths, clad in white and bedecked with ribbons, with swords in their hands, travel from one village to another, performing a rude dance, called the sword dance. They are attended by a fiddler,—a youth whimsically dressed, and named 'Bessy,'—and by one who personates a physician. One of the six youths acts the part of king, in a sort of farce, which consists chiefly of singing and dancing, when the 'Bessy' interferes, while they are making a hexagon with their swords, and is killed. These frolics are continued till New Year's Day, when the money collected is spent at the alehouse.

27.—JOHN EVANGELIST. *See p.* 113.

28.—INNOCENTS.

The slaughter of the Jewish children by Herod is commemorated on this day. The festival is very antient, for Tertullian and Saint Cyprian call these Innocents martyrs, and Prudentius has written a hymn upon the subject. *Childermas* day is another name for this feast.

On this day, the *boy-bishop* (episcopus puerorum) laid down his office, after solemn procession and great pageantry.—*See* ST. NICHOLAS, Dec. 6.

The learned Gregory, in his Treatise on the Boy Bishop, preserved in his posthumous works, observes, that 'it hath been a custom, and yet is elsewhere, to whip up the children upon Innocents Day morning, that the memorie of Herod's murder of the Innocents might stick the closer, and in a moderate proportion to act over the crueltie again in kinde.'

Dugdale, in his Origines Juridiciales, p. 247,

speaking of the Christmas festivities kept in Lincoln's Inn, cites an order dated 9th Hen. VIII, 'that the King of Cockneys, on Childermas Day, should sit and have due service; and that he and all his officers should use honest manner and good order, without any waste or destruction making in wine, brawn, chely, or other vitails: as also that he, and his marshal, butler, and constable marshal, should have their lawful and honest commandments by delivery of the officers of Christmas; and that the said King of Cockneys, ne none of his officers, medyl neither in the buttery, nor in the stuard of Christmass his office, upon pain of 40*s*. for every such medling. And lastly, that *Jack Straw*, and all his adherents, should be thenceforth utterly banisht and no more to be used in this house, upon pain to forfeit, for every time, five pounds, to be levied on every Fellow hapning to offend against this rule.'

31.—SAINT SILVESTER.

He was Bishop of Rome; and succeeded Miltiades in the papacy, in 314. Silvester is accounted the author of several rites and ceremonies of the Romish church, as asylums, unctions, palls, corporals, mitres, &c. He died in 334.

Astronomical Occurrences.

Of the Nature and Uses of Comets.

As we shall, at the close of this article, give an account of Comets as bodies connected with the solar system, it may not be amiss here to speculate concerning their nature, or, at least, to record the opinions of other persons on this subject. Without detailing the various wild and extravagant notions which have been entertained respecting them, it may be observed that, during the ages of barbarism and superstition, they were regarded as the harbingers of awful convulsions, both in the political and in the

physical world. Wars, pestilence, and famine, the dethronement of kings, the fall of nations, and the more alarming convulsions of the globe, were the dreadful evils which they presented to the terrified imaginations of mankind.

As the light of knowledge increased, these gloomy apprehensions were dissipated, the absurdities of licentious speculators supplied their place, and all the ingenuity of conjecture was exhausted in assigning some rational office to these wandering planets. Even a century ago the famous Whiston, the friend and companion of Sir Isaac Newton, regarded them as the abode of the damned. This philosopher and divine, indeed, not only pretended to fix the residence of the damned, but also the nature of the punishment. Wheeled from the remotest limits of the system, the chilling regions of darkness and cold, the comet wafted them into the very vicinity of the Sun; and thus alternately hurried its wretched tenants to the terrifying extremes of perishing cold and devouring fire.

Sir Isaac Newton shows that the atmosphere of comets will furnish vapour sufficient to form their tails: this he argues from that wonderful rarefaction observed in our air, at a distance from the earth. Now the ascent of vapours into the tail of the comet is, he supposes, occasioned by the rarefaction of the matter of the atmosphere at the time of its being in the perihelion. The ascent of the vapours will be promoted by their circular motion round the Sun; by means whereof, they will endeavour to recede from the Sun, while the Sun's atmosphere is at rest, or nearly so, having no motion but what it receives from the Sun's rotation on its axis. Thus are the vapours raised into the tails of comets in the neighbourhood of the Sun, where the orbits are most curved, and where the comets, being within the denser atmosphere of the Sun, have their tails of the greatest length. The tails thus produced, by preserving that motion, and at the same time gravitating towards the Sun, will move round his

body in ellipses in like manner as their heads; and, by this means, will ever accompany, freely adhere to, and go off along with their heads into remote regions; and either return thence, together with the comets, after a long series of years, or perhaps be lost there, and vanish by little and little, and the comets be left bare, till their return; when, descending towards the Sun, short tails are gradually and slowly produced from the heads; which afterwards, in the perihelion, descending down into the Sun's atmosphere, will be immensely increased. The vapours when they are thus dilated, rarefied, and diffused through all the celestial regions, may probably, by degrees, be attracted to the planets, and become intermingled with their atmospheres. The same author adds, that for the preservation of the water and moisture of the planets, comets seem absolutely necessary, from whose condensed vapours and exhalations all that moisture which is spent in vegetation and putrefaction may be recruited. He likewise says, 'I suspect that the spirit which makes the finest, subtilest, and the best part of our air, and which is absolutely requisite for the life and being of all things, comes principally from the comets. So far are they from portending any hurt or mischief to us, which the natural fears of men are apt to suggest from the appearance of any thing that is uncommon and astonishing.'

Another use which the immortal Newton conjectures comets may be designed to serve, is, that of recruiting the Sun with fresh fuel, and repairing the consumption of his light by the streams continually sent forth in every direction from that luminary. In support of this conjecture he observes, that comets in their perihelion may suffer a diminution of their projectile force, by the resistance of the solar atmosphere; so that by degrees their gravitation towards the Sun may be so far increased, as to precipitate their fall into his body. Thus, also, fixed stars which have been gradually wasted may be supplied with fresh fuel, ac-

quire new splendour, and be taken for new stars: of this kind are those fixed stars, which appear on a sudden, or shine with a surprising brightness at first, and afterwards vanish by degrees.

Comets have been regarded as the cause of the deluge, an event that cannot be explained on natural principles, but by the shock of some celestial body. The transient effect of a comet passing near the earth could scarcely amount to any great convulsion, though it might by its attractive powers raise the waters into a mountain that should overwhelm a large part of the globe; but if the earth were actually to receive a shock from one of these bodies, the consequences would be awful. A new direction might be given to its rotatory motion, and the globe would revolve round a new axis. The seas, forsaking their antient beds, would be hurried by their centrifugal force to the new equatorial regions; islands and continents would be covered by the rush of waters to the new equator, and every vestige of human industry and genius at once be destroyed.

Perhaps, at no time has the earth been threatened with a nearer appulse from a comet, than from that in 1680; for, by calculation, Dr. Halley found, that on the 11th of November it was not more than 4000 miles distant from the orbit of the earth; at which time, had the earth been in that part of its orbit, it is impossible to conjecture what might have been the consequences of so near an appulse. Their mutual gravitation must have caused a change in the plane of the orbit of the earth, and in the length of our year. It might, indeed, have reduced this beautiful frame to its original chaos.

Mr. Whiston supposed, that, before the fall, the earth revolved round the Sun in the plane of the ecliptic, keeping always the same points of its surface towards the same fixed stars; by this means, as every meridian would come to the Sun but once in a whole revolution, a day and a year were then the

same; but that a comet striking obliquely upon the earth gave it the diurnal revolution. He farther imagined that the antediluvian year consisted of 360 days, but that the additional matter deposited upon the earth from the atmosphere of the comet, at the time of the deluge, so retarded its revolution about the Sun, that it now requires 365¼ to complete the same.

This comet he thought would probably, by coming near the earth after being heated to an immense degree in its perihelion, be the instrumental cause of that great catastrophe, the general conflagration, foretold in the sacred writings.

The times of the Sun's rising and setting will be as follow:—

Thursday,	1st,	Sun rises 56 m.	past 7.	Sun sets at 4 m.	past 4
Sunday,	11th,	5	8	55	3
Wednesday,	21st,	8	8	52	3
Saturday,	31st,	5	8	55	3

Equation of Time.—The following table will point out the number of minutes and seconds that are to be subtracted from, or added to, the time shown on the dial, to obtain true or equal time for every fifth day of the month:—

			m.	s.
Thursday,	1st,	from the time on the dial SUBTRACT	10	49
Tuesday	6th,		8	49
Sunday,	11th,		6	37
Friday,	16th,		4	12
Wednesday,	21st,		1	43
Monday	26th,	ADD	0	46
Saturday,	31st,		3	12

The Sun enters Capricorn on the 22d, at 53 m. after 9 in the morning.

The Moon enters her last quarter on the 3d day, at 45 m. past 3 o'clock in the morning. The new Moon, or change, occurs at 36 m. past 6 of the 11th: she enters upon her first quarter on the 19th, at 5 m. past midnight; and is at the full on the 26th, at 11 o'clock precisely. The time of the Moon's rising for the first five days after the full, will be as follows:—

Dec. 27th,	42 m. after	4
28th,	53	5
29th,	11	7
30th,	35	8
31st,	54	9

On the 26th of December, the Moon, being at the full, will be eclipsed, visible at London :—

Beginning of the eclipse will be	56 m. past	9
Middle	$7\frac{1}{5}$	11
End	$18\frac{1}{4}$	12

Digits eclipsed 5° 50′¼ on the Moon's north limb.

On the 24th, the Moon will eclipse the star 1 ♉ : the immersion will take place at 58 m. past 9 in the evening, and the emersion at exactly 11 o'clock. In the former case, the star will be 6′½ south of the Moon's centre; and in the latter, 10′¼ on the same side.

On the 26th, the Moon will eclipse the star ζ ♉ : the immersion will occur at 6 m. past 4 in the morning, and the emersion at 26 m. past 4; and, in both cases, the star will be 15′¼ north of the Moon's centre.

Mercury is stationary on the 7th: on the 26th, Mercury will eclipse the star κ ♎ ; and, on the 30th, it will eclipse λ ♎. Mercury's greatest elongation will be on the 16th. The superior conjunction will be at 8 o'clock in the morning of the 26th. Jupiter will be in its quadrature on the 31st.

There will be visible at Greenwich, this month, three eclipses of Jupiter's first satellite, and two of the second, viz.

1st Satellite.			2d Satellite.		
15th,	at 26 m. past 3	in the morning.	23d,	at 24 m. past 4	in the morning.
22d,	20 5		29th,	57 6	
31st,	41 1				

VIEW OF THE SOLAR SYSTEM.

Of the Georgian Planet, and of Comets.

This planet entirely escaped the attention and notice of antient astronomers. It was observed as a

small star by Flamstead, Mayer, and Le Mounier; but Dr. Herschel discovered its motion, and ascertained it to be a planet. Like Mars, Jupiter, and Saturn, it moves from west to east round the Sun. The duration of its sidereal revolution is 30,689 days, or about 84 years. Its motion, which is nearly in the plane of the ecliptic, begins to be retrograde before and after opposition, when the planet is 103°½ from the Sun; its retrograde motion continues 151 days, and the arc of retrogradation amounts to rather more than 3°½. If we judge of the distance of this planet by the slowness of its motions, it ought to be at the very confines of the planetary system.

The apparent magnitude of this planet is so small, that it can seldom be seen with the naked eye. It is accompanied by six satellites. Its mean distance from the Sun is about 1,800,000,000 miles. Its diameter is 4½ times larger than that of the earth, being more than 35,000 English miles. When seen from the earth, its apparent diameter, or the angle which it subtends at the eye, is 3″ 32‴. As the distance of this planet from the Sun is twice as great as that of Saturn, its disk will appear four times smaller, and is but little the object of notice, except with those who possess good instruments. When, however, the sky is very serene and clear, it may be found with the naked eye; and it appears as a star of the sixth magnitude, with a bluish white light, and a brilliancy between that of Venus and the Moon; but, with a power of 200 or 300, the disk is visible, and very well defined.

The want of light, arising from the great distance of this planet from the Sun, is supplied by six satellites, all of which were discovered by Dr. Herschel. The first satellite revolves round its primary in 5 d. 21 h. 25 m.; the second, in 8 d. 17 h.; the third, in 10 d. 23 h.; the fourth, in 13 d. 11 h.; the fifth, in 38 d. 1 h. 49 m.; and the sixth requires to com-

plete its revolution nearly 108 days[1]. The second and fourth of these satellites were discovered on the 11th of January, 1787. The other four were discovered in 1790 and 1794; but their distances and periodic times, though set down above, are not so accurately ascertained as the other two. It is a remarkable circumstance, however, that all the six satellites move in a retrograde direction, and in orbits lying in or nearly in the same plane, and almost perpendicular to the ecliptic. La Place imagines that the first five satellites of the Georgian planet may be retained in their orbits by the action of the equator, and the sixth by the action of the interior satellites; and hence he concludes, that this planet revolves about an axis very little inclined to the ecliptic, and that the time of its diurnal rotation cannot be much less than that of Jupiter and Saturn.

The additions to our astronomical knowledge made by the discovery of this noble planet, and the other four smaller planetary bodies before described, as moving between Mars and Jupiter, do not merely present us with a few insulated facts similar to those with which we were formerly acquainted: 'They exhibit to us,' says Mr. Brewster, 'new and unexpected phenomena, which destroy that harmony in the solar system which appeared in the magnitudes and distances of the planets, and in the form and position of the orbits. The six planets, which were formerly supposed to compose our system, were placed, excepting in the case of Mars and Jupiter, at somewhat regular distances from the Sun: they all moved from west to east, and at such intervals as to prevent any extraordinary derangements which might arise from their mutual action. Their magnitudes, too,

[1] Dr. Herschel says, the eclipses of these satellites will be visible to the inhabitants of this planet in 1818, when they will appear to the observer to ascend through the shadow of the planet in a direction almost perpendicular to the ecliptic.

with the exception of Saturn, increased with their distance from the centre of the system; and the eccentricity, as well as the inclination, of their orbits, was comparatively small. In the system, as it is now understood and delineated by the most accurate observers, we find four very small planets between the orbits of Mars and Jupiter, placed at nearly the same distance from the Sun, and moving in very concentric orbits which intersect each other, and are greatly inclined to the plane of the ecliptic. The satellites of the Georgian planet, likewise, move almost at right angles to the plane of the orbit; and, what is still more surprising, the direction of their motion is opposite to that in which all the other planets and planetary bodies, whether primary or secondary, circulate round their respective centres.'

Comets are a class of celestial bodies which appear occasionally in the heavens. They exhibit no visible or well defined disk, but shine with a pale and cloudy light, accompanied with a tail or train turned from the Sun. They are found in every part of the heavens, moving in all directions. When examined through a good telescope, a comet may be said to resemble a mass of aqueous vapours, encircling an opaque nucleus of different degrees of darkness in different comets, though sometimes no nucleus can be seen. As the comet advances towards the Sun, its faint and nebulous light becomes more brilliant, and its luminous train gradually increases in length.—When it reaches its perihelion, the intensity of its light, and the length of its tail, reach their maximum, and sometimes it shines with all the splendour of the planet Venus. During its passage from the perihelion, it is shorn of its splendour, it gradually resumes its nebulous appearance, and its tail decreases in magnitude, till it reaches such a distance from the earth, that the attenuated light of the Sun, which it reflects, ceases to reach the eye. Traversing unseen, by man, the remote portion of its orbit, the comet wheels its

ethereal course far beyond the limits of the solar system. What region it there visits, or upon what destination it is sent, we are wholly ignorant of. After a lapse of years, we perceive it again returning to our system, and tracing a portion of the same orbit round the Sun which it had formerly described.

Hevelius observed of the comet in 1661, that its body was of a yellowish colour, bright and conspicuous, but without any glittering light. In the middle was a dense ruddy nucleus, almost equal to Jupiter, encompassed with a much fainter, thinner matter. It changed its appearance almost every day. On the 5th of February, the nucleus was somewhat bigger and brighter, of a gold colour, but its light was more dusky than the rest of the stars; it appeared also to be divided into a number of parts. On the following day the nucleus still appeared, though less than before. One of them, on the left side of the lower part of the disk, appeared to be denser and brighter than the rest; its body was round, and representing a little lucid star, the nuclei still encompassed with another kind of matter. February 10th, the nuclei were more obscure and confused, but brighter at top than at the bottom. On the 13th, the head was diminished, both in magnitude and brilliancy; and on the 28th, its matter seemed much dispersed, and no distinct nucleus at all appearing.

Wiegelius gives an account of another which he saw through a telescope in the year 1664. He observed the Moon, and a little cloud, illuminated by the Sun, at the same time, and distinctly saw that the Moon appeared of a continued luminous surface; but the comet was very different, being perfectly like a little cloud enlightened by the Sun's beams.

Comets also are, to appearance, surrounded with atmospheres of a prodigious size, often rising ten times higher than the nucleus. They have sometimes been seen with different phases, like the Moon.

Dr. Long describes the appearance of a comet to the naked eye in the following manner:—'The head appears sometimes like a cloudy star; sometimes it shines with a dull light like that of the planet Saturn; sometimes they have been seen to exceed stars of the first magnitude; some have surpassed Jupiter, and even Venus, in brilliancy, and to have cast a shadow as Venus sometimes does.'

There are three comets which have been much celebrated, viz. those which appeared in 1680, 1744, and 1759. The comet of 1680 was remarkable for its near approach to the Sun; so near, that in its perihelion it was not above a third part of the diameter of that luminary from the surface thereof. Its great heat in that position was computed to be 2000 times hotter than iron at its white heat; of course, it must have been entirely dissipated, if it had been any other than a fixed and solid body. It must also have retained its heat an immense time; for a globe of iron, of an inch in diameter, exposed to the open air, scarcely loses its heat in less than an hour; but a larger globe will retain its heat longer in proportion to its diameter, because the surface at which it grows cold varies in that proportion less than the quantity of hot matter. Therefore, a globe of red hot iron, as big as our earth, would scarcely cool in 50,000 years. The period of this comet has been calculated at 575 years; and, if the computation be accurate, it will not return to the vicinity of the earth till about the year 2225. This comet, at its greatest distance, is about eleven thousand two hundred millions of miles from the Sun, and at its least distance it is not more than 49,000 miles. In that part of its orbit which was nearest the Sun, it was computed to move at the rate of 880,000 miles in an hour.

Dr. Halley, who saw the comet which appeared in 1682, says, 'that there are many things which make me believe that the comet which Apian saw, in the year 1531, was the same with that which Kepler and

Longimontanus more accurately described in the year 1607; and which I myself have seen return, and observed in 1682. All the elements agree, and nothing seems to contradict this opinion, except the inequality of the periodic revolutions; which inequality is not so great, but that it may be owing to physical causes. For the motion of Saturn is so disturbed by the rest of the planets, especially Jupiter, that the periodic time of that planet is uncertain for some whole days together. How much more, therefore, will a comet be subject to like errors, which rises, perhaps, four times higher than Saturn, and whose velocity, though increased but very little, would be sufficient to change its orbit from an ellipse to a parabola! And I am the more confirmed in my opinion of its being the same; for in the year 1456, in the summer time, a comet was seen passing retrograde between the earth and the Sun, much after the same manner; which, though nobody made observations upon it, yet, from its period and manner of transit, I cannot think different from those I have just mentioned: and since looking over the history of comets, I find, at an equal interval of time, a comet to have been seen about Easter in the year 1305, which is another double period of 151 years before the former. Hence, I think, I may venture to foretel that it will return again in 1758.'

Dr. Halley computed the effect of Jupiter upon this comet in 1682, and found that it would increase its periodic time above a year; in consequence of which, he predicted its return at the end of the year 1758, or the beginning of 1759. M. Clairault computed the effects of both Saturn and Jupiter, and found that the former would retard its return in the last period 100 days, and the latter 511 days; and he determined the time when the comet would come to its perihelion to be on the 15th of April, 1759; observing, however, that he might err a month, from neglecting small quantities in the computation. The comet did pass the perihe-

lion on the 13th of March, within 33 days of the time computed. Now, if Dr. Halley meant the time of its passing the perihelion, and we add 100 days for the action of Saturn, which he did not take into the calculation, it will bring it very near to the time in which it passed the perihelion, and prove his computation of the effect of Jupiter to have been accurate. But, if he meant the time when the comet would first appear, his prediction was accurate; for it was first seen on December 14, 1758. Dr. Halley, therefore, had the glory, first to foretel the return of a comet; and the event answered, in a remarkable manner, his prediction. He further observed, that the action of Jupiter, in the descent of the comet towards its perihelion in 1682, would tend to increase the inclination of its orbit; and, accordingly, the inclination in 1682 was found to be greater by 22 than it was in 1607.

Dr. Halley suspected that the comet in 1680 was the same that appeared in 1106, 531, and also in the year 44 before the Christian æra. He also conjectured, that the comet observed by Apian in 1532 was the same as that observed by Hevelius in 1661: if so, its period was 129 years, and it ought to have returned in 1789; but it did not appear, though astronomers here, and on the Continent, were watching its approach with great anxiety.

From the beginning of our æra to this time, it is probable, according to the best accounts, that there have appeared 500 comets. Before that time, above 100 others are mentioned in history; but, perhaps, half of these, had they been accurately observed, would not have proved comets. When, however, we consider that many others may not have appeared, from being too near the Sun; from appearing in moonlight; from being in the other hemisphere; from being too small to be perceived; or which may not have been recorded; it is reasonable to suppose that the whole number is much greater. It is, on

the other hand, very likely, that of the comets that have been recorded as seen, the same may have appeared several times, and therefore the number may be less than is stated. [See Vince's Complete System of Astronomy.]

Remarkable comets appeared in the year 1807, 1808, and 1811; of these we may, in a subsequent volume, give enlarged accounts. We shall only observe, (1) That of the 98 comets whose elements have been observed and calculated previously to the year 1808, 24 have passed between the Sun and the orbit of Mercury; 33 between the orbits of Mercury and Venus; 21 between the orbits of Venus and the earth; 16 between the orbits of the earth and Mars; 3 between the orbits of Mars and Ceres; and 1 between those of Ceres and Jupiter. (2) That 32 comets have appeared between the months of April and September, and 66 between September and April. (3) That the greater part of the comets have their perihelion nearest to their ascending nodes. (4) That 50 comets move from west to east. (5) That the orbits of the comets are not confined to any particular region of the heavens, like the planets that have long been known, but seem to be inclined at every possible angle of the ecliptic. [See Brewster's Ferguson.]

The Naturalist's Diary.

Decrepit now, December creeps along
The plashy plains—mantled in furs, that wrap
His shuddering limbs, afraid of every gust
Of merciless and biting cold, and sleet
That chilly-showering falls.

VERDANT groves, variegated meadows, and radiant skies, are now succeeded by leafless woods, dejected wastes, and a frowning atmosphere. Rain and wind are extremely prevalent, and, as the frost seldom sets

in till the latter end of December, this month may be reckoned the most unpleasant of the whole year. The weather is cold, bleak, and gloomy; and, generally, one continual succession of storms and tempests. At other times, we have ice and snow; and, about Christmas, the cold is sometimes intense. No inconvenience is less superable by art or diligence than the inclemency of climates: 'A native of England, pinched with the frost of December, may lessen his affection for his own country, by suffering his imagination to wander in the vales of Asia, and sport among woods that are always green, and streams that always murmur; but, if he turns his thoughts towards the polar regions, and considers the nations to whom a great portion of the year is darkness, and who are condemned to pass weeks and months amid mountains of snow, he will soon recover his tranquillity; and, while he stirs his fire, or throws his cloak about him, reflect how much he owes to Providence, that he is not placed in Greenland or Siberia.'

> There Winter, armed with terrors here unknown,
> Sits absolute on his unshaken throne;
> Piles up his stores amid the frozen waste,
> And bids the mountains he has built stand fast;
> Beckons the legions of his storms away
> From happier scenes to make the land a prey;
> Proclaims the soil a conquest he has won,
> And scorns to share it with the distant Sun. COWPER.

Were we condemned to the dreary climes, and to the manner of life, of the natives of the arctic countries, we should deem it insupportable. How deplorable should we think our situations, if we saw nothing before our eyes but stupendous mountains of ice and extensive wastes of snow; if the absence of the Sun, for entire months, rendered the cold more insupportable still; if, instead of our comfortable habitations, we had no other asylum than a gloomy cavern, or a skin-covered tent; if we had no other resource for our subsistence than a perilous activity in the chase; and if we were deprived of all the plea-

sures which the arts impart, and of all the sweets of society that exalt existence, and render life delightful! Let the consideration, then, of the unspeakable advantages which we enjoy in our temperate clime, and to which we are so inattentive, not only banish every repining thought, that we are not placed in still milder regions and still serener skies, but teach us to regard the Divine Being with increasing love and unceasing adoration[a].

Some lines, written on the 1st of December, by Mr. Southey, pleasingly discover the beauties of winter:—

Tho' now no more the musing ear
Delights to listen to the breeze
That lingers o'er the greenwood shade,
I love thee, Winter! well.

Sweet are the harmonies of Spring,
Sweet is the Summer's evening gale,
Pleasant the Autumnal winds that shake
The many-coloured grove;

And pleasant to the sobered soul
The silence of the wintry scene,
When Nature shrouds her in her trance,
In deep tranquillity.

Not undelightful now to roam
The wild-heath sparkling on the sight;
Not undelightful now to pace
The forest's ample rounds;

And see the spangled branches shine,
And snatch the moss of many a hue
That varies the old tree's brown bark,
Or o'er the grey stone spreads.

The clustered berries claim the eye,
O'er the bright holly's gay green leaves;
The ivy round the leafless oak
Clasps its full foliage close.

[a] Bishop Berkeley has observed, and with great truth, that fields, groves, and meadows, are nowhere in such perfection as in England;—and it is a remark of Charles II, that a gentleman may walk out oftener, and with much greater comfort, in England, than in any other country of Europe.

Those dwarfs of the vegetable kingdom, *mosses*, and the liverwort (*lichen*), are now the only subjects for the examination of the botanist. Mosses are spread over the whole globe, so that, in some situations, the soil is exclusively covered by them; and thus, frequently, bare rocks gradually become fertile. As they grow most copiously on the north-west side of trees, it is probable that mosses serve to protect them from the severity of cold; but if these parasitical plants be suffered to increase too abundantly, they not only tend materially to injure trees, but also to stifle the more useful vegetables of the soil. Mosses are almost constantly green, and have the finest verdure in autumn. Some of the mosses spread in a continued leaf; others grow hollow above, like small cups; others round on the top, like mushrooms; and some shoot out in branches. All these have their different seeds, which do not require great delicacy of soil, but take root on any thing where they can grow unmolested. Those *mosses* which rise immediately from the earth are more perfect; some of them white and hollow, or fistulous; and some of them not much inferior to regular plants. The more perfect sorts grow on stones, in the form of a fine pile or fur, like velvet, and of a glossy colour, between green and black. But the first sort, which appears like scurf or crust, seems to rise but one degree above the unwrought mould or earth [1]. An unhealthy tree is never without these imperfect *super-plants*; and the more unhealthy the tree is, the better they thrive. A few of the most remarkable mosses, are, the greater water-moss (*fontinalis antipyretica*);

[1] Yet we are far from being certain that this is the lowest degree of vegetation. For it has been discovered by the microscope, that the mouldiness which appears on spoiled confections, or even some sorts of pickles, by which they appear as if covered with a white crust, are only numerous clusters of diminutive mushrooms. This is surprising, and carries the beginnings of vegetation almost out of our sight indeed.

bryum rurale; grey bug-moss (*sphagnum palustre*); yellow powder-wort (*byssus candelaris*, or *lichen flavus* of Withering); and the common club-moss (*lycopodium clavatum*). This last grows in dry mountainous places, heaths, and woods, and is principally found in the north of England; it produces a prostrate creeping stem from one to three yards in length, and flowers from July to August. Mosses, diminutive as they seem, are no less perfect plants than those of greater magnitude, having roots, flowers, and seeds:

Each moss,
Each shell, each crawling insect, holds a rank
Important in the plan of HIM who formed
This scale of beings; holds a rank, which lost
Would break the chain, and leave a gap
That Nature's self would rue!

Of the *liverworts*, or lichens, there are more than three hundred and sixty species, the greater number of which are natives of Britain. The various kinds of lichens are subservient to many important purposes; some are used as dying drugs: in Lapland, one species constitutes the sole winter subsistence of that useful animal the reindeer; and, in Britain, the *lichen islandicus*, which grows much on the mountains of Wales and Scotland, is used as a medicine. In Iceland, food is prepared from it. For this purpose, a dish of the lichen is prepared by chopping it small, boiling it in three or four successive portions of water to take off its natural bitterness, and then for an hour or two in milk. When cold, this preparation has the form of a jelly, which is eaten with milk or cream, and makes a very palatable dish.

The most minute species of this great genus hold a much more important place in the economy of nature than is apparent to superficial observers. They are the first beginning of vegetation on stones of all kinds exposed to the air, whose decomposing surfaces are the receptacle of their imperceptible seeds, and

soon afford nourishment to the sprouting plants, whose minute fibrous roots still farther insinuate themselves. The larger species take possession of every cavity and fissure, both of stones, and of the decaying external bark of trees. In time they all decay, and furnish a portion of vegetable mould, capable of nourishing mosses, or still larger plants. The residuum of these being still more considerable, is washed by rains into large cavities, where even forest trees can scatter their seeds; by the penetrating power of whose roots, great masses are dislodged from the most lofty rocks. Thus the vegetable kingdom exercises dominion over the tributary fossil world, and, in its turn, affords the same no less necessary aid to animal existence. Nothing in nature is allowed to remain stationary, idle, or useless, and the most inconsiderable agents frequently appear, in the hands of Divine Providence, to be the most irresistible.

The shortest day, or winter solstice, happens on the 21st of December; and the joyful season of Christmas is now fast approaching. Some rustic pursuits and pleasures, at this period of the year, are beautifully described in Bampfylde's charming Sonnet on Christmas:

With footstep slow, in furry pall yclad,
His brows enwreathed with holly never sere,
Old Christmas comes, to close the wained year;
And aye the shepherd's heart to make right glad;
Who, when his teeming flocks are homeward had,
To blazing hearth repairs, and nut-brown beer,
And views well pleased the ruddy prattlers dear
Hug the grey mungrel; meanwhile maid and lad
Squabble for roasted crabs. Thee, Sire, we hail,
Whether thine aged limbs thou dost enshroud
In vest of snowy white, and hoary veil,
Or wrap'st thy visage in a sable cloud;
Thee we proclaim with mirth and cheer, nor fail
To greet thee well with many a carol loud.

In this month, those wild animals which pass the winter in a state of torpidity, retire to their hiding

places. The frog, lizard, badger, and hedgehog, which burrow under the earth, belong to this class; as also the bat, which is found in caverns, barns, &c. suspended by the claws of its hind feet, and closely enveloped in the membranes of the fore feet. Dormice, squirrels, water-rats, and field-mice, provide a large stock of food for the winter season.

On every sunny day through the winter, clouds of insects, usually called gnats (*tipulæ* and *empedes*), appear sporting and dancing over the tops of evergreen trees in shrubberies; and they are seen playing up and down in the air, even when the ground is covered with snow. At night, and in frosty weather, or when it rains and blows, they appear to take shelter in the trees.

Little work is done by the farmer, out of doors, in this month; his cattle demand almost all his attention and assiduity.

The grave of the year is now prepared, and 'the dark and wintery wreath' is already strewn over it: another year, another delightful season which is again to awaken all nature, and diffuse warmth and life and happiness around, is eagerly anticipated;—inspiring new hopes, and the most pleasing expectations:—

Another Spring! my heart exulting cries;
Another YEAR! with promised blessings rise!
ETERNAL POWER! from whom those blessings flow,
Teach me still more to wonder, more to know:
Seed-time and *Harvest* let me see again;
Wander the *leaf-strewn* wood, the *frozen* plain:
Let the first flower, corn-waving field, plant, tree,
Here round my home, still lift my soul to *THEE*;
And let me ever, midst thy bounties, raise
A humble note of thankfulness and praise.

BLOOMFIELD.

Meteorological Remarks.

METEOROLOGY, or that science which explains the phenomena of the weather, remained for a long period in a state of comparative neglect. This is sufficiently remarkable when we consider that almost all the operations necessary for the support of human life, and almost all the comforts of corporeal feeling, depend upon the state of the atmosphere. It was not till the seventeenth century that any progress was made in the investigation of the laws of meteorology, when the most important discoveries of the *barometer* and *thermometer* occurred;—these, added to the invention of excellent *hygrometers* and *electrometers*, in the eighteenth century, have enabled the philosopher to make accurate and satisfactory observations, which have been collected from time to time, and many important practical results have been deduced therefrom.

The advantages arising from a foreknowledge of the changes of the weather, were duly appreciated by the antients; and, though ill-founded predictions, in later times, have somewhat impeached the credit of meteorological remarks, yet a very considerable degree of certainty in this respect may easily be attained by the diligent observer of nature. The experienced fisherman will rarely unfurl his sails when a storm is approaching; and, in like manner, if farmers were equally attentive, and had acquired equal judgment in this art, they would reap very material benefit, by profitably regulating the management and housing of their crops.

It does not fall within the scope of the present work to enter at large upon the interesting subject of Meteorology:—there are already scientific treatises on this subject to which the *student* may resort. We shall therefore proceed, first, to offer some remarks on the artificial distinctions of clouds, accord-

ing to the nomenclature of Mr. Luke Howard; and afterwards to give a few popular rules for predicting the changes in the weather, which are deduced from the various appearances of the atmosphere—from animals and vegetables—from philosophical instruments, &c.; together with the Shepherd of Banbury's twenty-five celebrated rules.

I.—Artificial Distinctions of Clouds.

Clouds are distinguished by seven modifications, the peculiarities of which seem to be caused by the agency of electricity: for example, three primary modifications, the *Cirrus*, the *Cumulus*, and the *Stratus*: two which may be considered as intermediate in their nature, the *Cirrocumulus* and *Cirrostratus*; one which appears to be a compound, the *Cumulostratus*; and, lastly, the *Cumulocirrostratus*, or *Nimbus*, a state which immediately precedes the resolution of clouds into rain.

1. *Cirrus.*—The cirrus is a cloud which appears to have the least density, and generally the most elevation, and which has the greatest variety of extent and direction. It may truly be called the *Proteus of the skies*; for, in some kinds of weather, its figure is so rapidly and so continually changed, that, after turning the eye away from it for a few minutes, it will frequently be found so completely altered as scarcely to be identified as the same cloud. This, however, is not always the case; it is sometimes visible for many hours and even days together, without much changing its appearance.

After a continuance of clear weather, the cirrus is frequently the first cloud which is seen. In this case it often looks like a fine whitish thread, pencilled, as Mr. Howard expresses it, on the clear blue sky: to this, other faint lines of the same kind are added laterally; they increase in size and length, and often serve as stems from which numerous branches proceed, and become other cirri of the same kind.

2. *Cumulus.*—This is a convex aggregate of watery particles increasing upwards from a horizontal base. It is commonly of a dense structure, formed in the lower atmosphere, and moving along in the current of wind which is next to the earth. Its first appearance is generally a small irregular spot, which becomes the nucleus on which it forms. This increases in size, preserves a flat horizontal base, and assumes somewhat of a conical figure. Cumuli vary a little in shape and dimensions, according to peculiarities in the operation of the causes which produce them. Sometimes they are pretty well defined hemispherical masses; at others, they rise into mountains, ranged in one plane, their silvery summits presenting a beautiful appearance.

3. *Stratus.*—The stratus is the lowest of clouds; its under surface usually rests on the earth or water. It may properly be called the *cloud of night*, as it frequently makes its appearance about sunset, and disappears soon after sunrise. When ascending in the atmosphere, it often seems to take the form of cumulus. It comprehends what we usually call fogs and mists, which in fine summer evenings are seen to ascend in spreading sheets from valleys, lakes, and fields. In autumn and winter it sometimes continues throughout the day. It must be remembered, however, that all fogs are not strati; some appear to be of the modification of cirrostratus.

4. *Cirrocumulus.*—After the cirrus has ceased to conduct the electric fluid, it probably either disappears by dispersion or evaporation, or it changes into the cirrocumulus or cirrostratus. Its change to the cirrocumulus is frequently marked by the following circumstances: it loses its cirriform and fibrous structure, descends lower in the atmosphere, and assumes the form of a number of well defined and roundish little clouds, lying in close horizontal arrangement: the change is more or less rapid on different occasions, and sometimes takes place in part

of the cloud, while the other part remains cirriform, or approaches to the nature of cirrostratus. The cirrocumulus is frequent in summer, and often forms very beautiful skies: at all times of the year it may be seen, in the intervals of showers, and before an increase of temperature, of which its prevalence is a pretty certain prognostic. Extensive beds of cirrocumuli, floating gently along in different altitudes, must have attracted almost every body's notice; the beautiful appearance of these clouds, with a moonlight evening, has been aptly described by Bloomfield:

> Far yet above these wafted clouds are seen,
> In a remoter sky, still more serene,
> Others detached in ranges through the air,
> Spotless as snow, and countless as they 're fair;
> Scattered immensely wide, from east to west,
> The beauteous semblance of a flock at rest.
>
> *The Farmer's Boy;—Winter.*

5. *Cirrostratus.*—In speaking of the cirrus, it has been observed that that cloud frequently changed into some other. Its change is generally into either the cirrocumulus or cirrostratus: when it passes to the latter, it descends lower in the atmosphere, its fibres become denser and more regularly horizontal, and it generally appears subsiding, or altering its forms. The figure of the cirrostratus, like that of the cirrus, is very various: sometimes it consists in dense longitudinal streaks; at others it looks like shoals of fish: sometimes the whole sky is so mottled with it, as to give the idea of the back of the mackerel; and hence called the mackerel-back sky. It frequently appears like the grains of polished wood, or is composed of fine fibres, disposed after the manner of the fibres of muscles, which often intersect each other.

6. *Cumulostratus.*—The change of the cumulus into the cumulostratus is effected in the following manner: The cumulus, losing its hemispherical

figure, increases irregularly upward, grows more dense, and overhangs its base in uneven or rugged folds: a pre-existing cirrus, cirrocumulus, or cirrostratus, or one perhaps immediately formed for the occasion, alights on its summit, and inosculates. The cumulostratus varies in appearance: sometimes it overhangs a perpendicular stem, and looks like a great mushroom; frequently a long range of cumulostrati appear together, which have the appearance of a chain of mountains with silvery tops. Before thunder-storms it seems frequently reddish, which some have imagined to arise from its being highly charged with the electric fluid.

7. *Nimbus.*—Clouds of any one of the abovementioned modifications, at the same degree of elevation, may increase so much as completely to obscure the sky: two or more different modifications may also do the same thing in different elevations, and the effect of this obscuration may be such as would induce an inattentive observer to expect the speedy fall of rain. It appears, however, from attentive observation, that no cloud effuses rain until it has previously undergone a change sufficiently remarkable to constitute it a distinct modification, to which the term *nimbus* has not inaptly been applied.

The best time for viewing the progress of nimbification is by stormy weather; cumuli may then be seen rising into mountains and becoming cumulostrati, while long strata of cirrostratus permeate their summits; and the whole phenomenon has the appearance of a range of mountains, transfixed by the mighty shafts of giants. After having existed some while in this form, they become large and irregular, and they get darker by intensity, till all seem concentrated in a dense black mass, with a cirrose crown extending from the top, and ragged cumuli entering from below, and eventually the whole resolves itself into rain.

According to Mr. Howard's theory, the origin of clouds is from the surface of the earth and waters.

That the vapour upraised by the accession of the diurnal temperature, in the manner described, is condensed into a visible cloud, either by cold, or by the air, from other causes; losing its power of holding so much water in solution as before; or by the joint influence of these causes. That cumuli are the immediate result of this process; and that in the evening, when the heat is diminished, the air deposits its vapour again in the form of dew, which gravitates to the ground, becoming more dense as it approaches the earth, because the lower atmosphere is now the coolest; and finally lodges on the surface of the herbage, or of the ground, where it awaits the re-ascending sun to be again evaporated. Cumuli also are represented to be dispersed, and their constituent particles to come to the ground in the same manner. According to the same theory, it appears that the other modifications are also the consequence of vapour carried up into the atmosphere, while their peculiarities are more immediately effected by the agency of the electric fluid.

We shall conclude with a brief review of the modifications ascending from the *Stratus*, formed by the condensation of vapour on its escape from the surface to the *Cumulus*, collecting its water in the second stage of its ascent, both probably existing by virtue of a positive electricity. From these proceeding through the partially conducting *Cumulostratus* to the *Cirrostratus* and *Cirrocumulus*; the latter positively charged, and considerably retentive of its charge; the former less perfectly insulated, and, perhaps, conducting horizontally; we arrive thus at the region where the *Cirrus*, light and elevated, obeys every impulse or invitation of that fluid, which, while it finds a conductor, ever operates in silence; but which, embodied and insulated in a denser collection of watery atoms, sooner or later bursts its barrier, leaps down in lightning, and glides through the *Nimbus* from its elevated station to the earth.

For further information on this interesting subject, we refer the inquisitive student to *The Philosophical Magazine*, vol. xvi; *Ree's Cyclopedia*, art. CLOUD; and particularly to Mr. Forster's very ingenious *Researches about Atmospheric Phenomena*, just published; to which last work we are indebted for some of our preceding observations.

II. RULES FOR PREDICTING CHANGES IN THE WEATHER.

§ i. *Prognostics from the Atmosphere, Winds, &c.*

1. A south wind or great heat in summer portends a whirlwind, *Job* xxxvii, 9.

2. Cold or fair weather is indicated by the north wind, which drives away rain, *Job* xxxvii, 9, 22.

3. A red sky in the evening foretels fair weather; in the morning, foul, *Matthew* xvi, 2.

> The evening red and morning grey,
> Is a sign of a fair day.

A red evening and a grey morning sets the pilgrim a walking.

4. A cloud rising out of the west indicates rain, *Luke* xii, 54.

5. A south wind is a sign of heat, *Luke* xii, 54.

6. If clouds appear white, and drive to the north-west, it is a sign of several days' fair weather; and thus Pliny, If the rising sun be encompassed with an iris, or circle of white clouds, and they disperse equally, this is a sign of fair weather.

> If woolly fleeces spread the heavenly way,
> Be sure no rain disturbs the summer day.

7. If in the evening a white mist be spread over a meadow contiguous to a river, it will be evaporated by the Sun's rays on the following morning, and is an indication of fine weather throughout the day; so in the morning, if a mist, which is impending over low lands, draw off towards those which are more elevated, it announces a fine day.

8. In the decay of the moon,
A cloudy morning bodes a fair afternoon.

9. When clouds appear like rocks and towers,
The earth's refreshed by frequent showers.

10. The gradual diminution of clouds till they can be no longer seen in the air, is a sign of fine weather; so likewise is the continuance of abundant dew upon the grass after a serene day.

11. The approach of bad weather may be known by the clouds gathering and lowering; and by the sky, after serene weather, becoming undulated, as it were, with small clouds.

12. If red the sun begins his race,
Be sure the rain will fall apace.

Or, as the same effect is more elegantly described by Virgil:

Above the rest the sun, who never lies,
Foretels the change of weather in the skies,
For if he rise unwilling to his race,
Clouds on his brow, and spots upon his face;
Or if through mists he shoot his sullen beams,
Frugal of light, in loose and straggling streams,
Suspect a drizzling day and southern rain,
Fatal to fruits, and flocks, and promised grain.
Georgic, I. 438.

13. During winter, if the clouds appear not unlike fleeces, i. e. thick and close in the middle, and very white at the edges, the surrounding sky being remarkably blue, they indicate hail or snow, or cold, chilling showers of rain.

14. Where the clouds appear moving in two opposite currents, and the lower current is wafted rapidly before the wind, it is a certain sign of rain; and, if they occur during summer, or generally in hot weather, they announce thunder storms.

15. Thunder is mostly preceded by hot, and followed by cold and drizzling or showery weather.

16. The west wind is usually damp, on account of the vast quantity of vapours it collects in its progress over the Atlantic Ocean: the south wind, which

blows from the torrid zone, is the warmest of the four, as the north wind is the coldest, while the east wind is the most dry; but if rain fall during the prevalence of an easterly wind, it may be expected to continue, with little intermission, for four and twenty hours.

We shall conclude this section with some illustrations from the prince of Roman poets.

Observe the daily circle of the *sun*,
And the short year of each revolving *moon*:
By them thou shalt foresee the following day;
Nor shall a starry night thy hopes betray.
When first the *moon* appears, if then she shrouds
Her silver crescent, tipped with sable clouds,
Conclude she bodes a tempest on the main,
And brews for fields impetuous floods of *rain*.
Or if her face with fiery flushings glow,
Expect the rattling *winds* aloft to blow.
But *four* nights old, (for that's the surest sign)
With sharpened horns if glorious then she shine;
Next day, nor only that, but all the moon,
Till her revolving race be wholly run,
Are void of tempests both by land and sea.

If *Aurora*, with half opened eyes,
And a pale sickly cheek, salutes the skies;
How shall the vine, with tender leaves, defend
Her teeming clusters, when the *storms* descend?

But more than all, the *setting sun* survey,
When down the steep of heav'n he drives the day;
For oft we find him finishing his race,
With various colours erring on his face.
If fiery *red* his glowing globe descends,
High *winds* and furious *tempests* he portends;
But if his cheeks are swoln with livid *blue*,
He bodes *wet* weather by his wat'ry hue:
If *dusky* spots are varied on his brow,
And, streaked with *red*, a troubled colour show,
That sullen mixture shall at once declare
Winds, *rain*, and *storms*, and elemental war.

But if with *purple* rays he brings the light,
And a pure heav'n resigns to quiet night;
No rising *winds* or falling *storms* are nigh.

---

§ ii. *Prognostics from Animals.*

1. Previously to rain and wind, or stormy weather, neat cattle and sheep seem more than usually desirous of feeding in their pastures, and to leave them with reluctance; also swine grunt loudly, and retire to their sties; geese and ducks wash themselves repeatedly and with little intermission, flying anxiously backwards and forwards; swallows fly low, and skim along the surface of the water, twittering with more loudness than usual; and poultry roll much in dust and sand, or gravel.

2. Wet and windy weather is likewise indicated by dogs becoming drowsy and stupid, and exhibiting an evident reluctance for food, except grass (particularly the species denominated dog's-grass, or couch-grass); and by cats losing their vivacity, and remaining within doors.

3. Continued rain is announced by pigeons returning slowly to their cotes; a change from cloudy or unsettled to greater wet, by flies stinging and swarming more than usual; and a sudden variation, accompanied with a storm, by wild ducks, plovers, bustards, and other aquatic birds, withdrawing to the sea-coast, or to the marshes.

4. The contrary circumstances evince the longer or shorter continuance of fine weather; to which may be added, that bees flying abroad, and labouring with that industry which has become proverbial; crows croaking in the morning; the robin or redbreast singing early from the more elevated branches of trees; and gnats flying in a columnar form, within the rays of the setting sun, are all indications of fine or serene weather.

5. Against rain, earth-worms creep out of the ground, moles cast up more earth than usual, and spiders come abroad.

6. Spiders' webs appearing in the air, or on the grass and trees, and a more than usual appearance of glow-worms at night, are a sure indication of fair and hot weather.

7. If larks soar aloft, and continue to sing for a long time, and kites fly high, we may expect fair and dry weather.

8. If, after long continued dry weather, the sky is thickening and rain approaching, we may frequently observe the cattle stretching their necks, and snuffing in the air with distended nostrils, and often, before srorms, assembled in a corner of the field, with their heads to the leeward.

9. The missile thrush *(turdus viscivorus)* in Hampshire, called the storm-cock, sings particularly loud and long before rain.

10. The swan. A correspondent in the *Athenæum* (vol. iii, p. 229) observes, 'I have for several years lived on the banks of a large river; and having from my boyish days heard it observed by people living in the neighbourhood, that rough weather was near at hand, as the *swans were flying*, I have for the last five years made it a practice to watch the movements of this beautiful bird. I have invariably found by observation, that when the swan flies any distance *against the wind*, however serene and fine the weather may appear at the time, so certainly will a wind, amounting almost to a hurricane, ensue within twenty-four hours after the animal has taken wing, and, generally, within twelve. I have frequently, after seeing the bird take a flight, told my acquaintance that a storm was near at hand, who have laughed at my suspicion, as there was not the slightest indication of a change observable; and afterwards, when the result has fulfilled my prediction, they have asked me by what sign I formed my prognostic.'

11. In men, frequently, aches, wounds, and corns, those keen and sensible announcers of every change in the weather, are more troublesome towards rain or frost.

12. Virgil, in his first *Georgic*, has beautifully described the sensibility of the brute creation to the various changes in the weather:—

Wet weather seldom hurts the most unwise;
So plain the signs, such prophets are the skies:
The watry *crane* foresees it first, and sails
Above the storm, and leaves the hollow vales:
The *cow* looks up, and from afar can find
The change of heav'n, and snuffs it in the wind.
The *swallow* skims the river's wat'ry face,
The *frogs* renew the croaks of their loquacious race,
The careful *ant* her secret cell forsakes,
And drags her eggs along the narrow tracks.
Huge flocks of rising *rooks* forsake their food,
And, crying, seek the shelter of the wood.
Besides, the sev'ral sorts of *wat'ry fowls*,
That swim the seas or haunt the standing pools,
Then lave their backs with sprinkling dews in vain,
And stem the stream to meet the promised *rain*.
The crow with clam'rous cries the *show'r* demands,
And single stalks along the desart sands.

Then, after show'rs, 'tis easy to descry
Returning suns, and a *serener* sky.

Their litter is not tossed by *sows* unclean,

And *owls*, that mark the setting sun, declare
A starlight evening, and a morning *fair*.

Then, thrice the *ravens* send the liquid air,
And croaking notes proclaim the *settled fair*:
Then round their airy palaces they fly,
To greet the sun; and, seized with secret joy
When storms are over-blown, with food repair
To their forsaken nests and callow care. DRYDEN.

§ iii. *Prognostics from Vegetables.*

1. The flowers of many vegetables expand their leaves as if to welcome the fair weather, and shut them to guard the tender fruit from the impending storms. This is remarkably apparent in the flowers of pimpernel (burnet), which have been called, for that reason, the countryman's weather-glass; in the down of dandelion and other downs; and in the contraction of the stalks of trefoil against rain.

2. When the flower of chickweed is fully open, fair weather may be expected: the convolvulus, and a species of wood-sorrel, shut up their leaves at the approach of rain.

3. Besides foretelling changes in the weather, many plants close and open their petals at certain hours of the day.

Linnæus has enumerated forty-six flowers which possess this kind of sensibility; he divides them into three classes. (1) *Meteoric flowers*, which less accurately observe the hour of folding, but are expanded sooner or later according to the cloudiness, moisture, or pressure of the atmosphere. (2) *Tropical flowers*, that open in the morning and close before evening every day; but the hour of expanding becomes earlier or later as the length of the day increases or decreases. (3) *Equinoctial flowers*, which open at a certain and exact hour of the day, and for the most part close at another determinate hour.—*(Darwin)*. The most common of these, in our own country, are thus prettily enumerated by Mrs. *Charlotte Smith*:—

In ev'ry copse and sheltered dell,
Unveiled to the observant eye,
Are faithful monitors, who tell
How pass the hours and seasons by.
The green-robed children of the spring
Will mark the periods as they pass,
Mingle with leaves time's feathered wing,
And bind with flowers his silent glass.
Mark where transparent waters glide,
Soft flowing o'er their tranquil bed;
There, cradled on the dimpling tide,
Nymphæa rests her lovely head,
But conscious of the earliest beam,
She rises from her humid nest;
And sees reflected in the stream
The virgin whiteness of her breast.
Till the bright daystar to the west
Declines in Ocean's surge to lave,
Then, folded in her modest vest,
She slumbers on the rocking wave.
See *Hieracium*'s various tribe,
Of plumy seed and radiate flowers,
The course of Time their blooms describe,
And wake or sleep appointed hours.
Broad o'er its imbricated cup
The *Goatsbeard* spreads its golden rays,

But shuts its cautious petals up,
  Retreating from the noontide blaze.
Pale as a pensive cloistered nun
  The *Bethlem-star* her face unveils,
When o'er the mountain peers the Sun,
  And shades it from the vesper gales.
Among the loose and arid sands
  The humble *Arenaria* creeps;
Slowly the *purple star* expands,
  But soon within its calyx sleeps.
And those small bells so lightly rayed
  With young Aurora's rosy hue,
Are to the noontide Sun displayed,
  But shut their plaits against the dew.
On upland slopes the shepherds mark
  The hour, when, as the dial true,
Cichorium to the towering lark
  Lifts her soft eyes, serenely blue.
And thou, 'Wee crimson-tipped flower,'
  Gatherest thy fringed mantle round
Thy bosom, at the closing hour,
  When nightdrops bathe the turfy ground;
Unlike *Silene*, who declines
  The garish noontide's blazing light;
But, when the evening crescent shines,
  Gives all her sweetness to the night.
Thus in each flower and simple bell,
  That in our path untrodden lie,
Are sweet remembrancers, who tell
  How fast their winged moments fly.

§ iv. *Prognostics from Philosophical Instruments.*

1.—*The Barometer.*

The barometer is an instrument to measure the weight or pressure of the atmosphere, and is so well known, that it is unnecessary here minutely to describe it. Suffice it to say, that the mercury in the glass tube is supported by the pressure of the air upon the mercury in the bason, in which the lower and open end of the tube is immersed; and the space in the tube above the mercury is a vacuum. When therefore the pressure of the air is increased, the mercury must rise in the tube; and when the pres-

sure is diminished, the mercury must fall. Upon the level of the surface of the earth, the limits of the height of the mercury in the tube above the surface of the mercury in the bason, is from 28 to 31 inches; a graduated scale is therefore placed against the tube from 28 to 31 inches, in order to ascertain the height of the mercury in the tube. But those barometers which are made to measure the heights of mountains, are graduated much lower; because, as you ascend in the atmosphere, the mercury falls. When the mercury stands at the altitude of 30 inches, the pressure of the air upon every square inch of the earth's surface is about 15 lbs. avoirdupois. At any other altitude of the mercury, the pressure will be in proportion to the altitude. Hence, if we take the surface of a middle-sized man to be 14½ square feet, when the air is lightest, its pressure on him is 13.2 tons, and when heaviest it is 14.3 tons; the difference of which is 2464 lbs. This difference of pressures must greatly affect us in respect to our animal functions, and therefore in respect to our health; more especially when the change is sudden. The pressure of the air upon the whole surface of the earth is about 7767029783563429 tons.

The following rules are given for judging of the weather by Mr. Patrick, and are esteemed the best which we have:—

1. The rising of the mercury presages, in general, fair weather; and its falling, foul weather; as rain, snow, high winds, and storms.

2. In very hot weather, the falling of the mercury indicates thunder.

3. In winter, the rising indicates frost: and, in frosty weather, if the mercury fall three or four divisions, there will follow a thaw. But in a continued frost, if the mercury rise, it will snow.

4. When foul weather happens soon after the falling of the mercury, expect but little of it; and, on

the contrary, expect but little fair weather when it proves fair shortly after the mercury has risen.

5. In foul weather, when the mercury rises much and high, and so continues for two or three days before the foul weather is quite over, then expect a continuance of fair weather to follow.

6. In fair weather, when the mercury falls much and low, and thus continues, for two or three days before the rain comes, then expect a great deal of wet, probably high winds.

7. The unsettled motion of the mercury denotes certain and changeable weather.

The *words on the plate* are not strictly to be adhered to, though they will, in general, agree, for the height of the mercury does not so much indicate the weather, as its motion up and down; to know, therefore, whether the mercury is actually rising or falling, the following rules should be observed:

1. If the surface of the mercury be convex, it is rising.

2. If the surface of the mercury be concave, it is falling.

3. If the *middle* of the mercury be plain, it is neither rising nor falling; for mercury put into a glass tube, will naturally have the parts adjacent to the tube convex.

4. As the mercury will adhere a little to the tube, before you note its height, it is proper to shake the barometer a little, by giving it a gentle tap with the knuckle.

The barometer never fails to show the true cause of the alterations of weather, and we are thereby prepared to expect them; but it may sometimes happen that the column of mercury will not alter its altitude agreeably to the foregoing rules: for when the atmosphere is charged with more aqueous matter than it can dissolve (for the atmosphere is known to be a dissolvent medium), the sur-

plus will form clouds, and these produce showers of rain when the mercury stands *very high*; and for the contrary reason, there may be sometimes no rain when the mercury is *very low*. Hence it follows, that we are generally satisfied by the barometer what weather we may at all times probably expect, though sometimes the contrary may happen, and a *general monitor* (to any wise man) is better than none at all.

2.—*The Thermometer.*

A thermometer is an instrument to measure different degrees of heat. It is a small glass tube with a bulb at the bottom, having the bulb and part of the tube filled with mercury, or spirits of wine. The tube is closed at the top, and the part not occupied by the fluid is a vacuum. Against the tube there is a scale to measure the expansion of the fluid under different temperatures; for fluids expand by heat, and contract by cold. An increase of temperature will therefore make the fluid rise in the tube, and a decrease of temperature will make it fall. The thermometer now in use is that which is constructed by Fahrenheit. On this scale, the fluid stands at 32 when it just begins to freeze, and at 212 when put into boiling water; at temperate it stands at 55; at summer heat, at 76; at blood heat, at 98. If the scale be continued to 600, it gives the heat of boiling mercury; and if it be continued downwards to 39 below 0, it gives a degree of cold which will freeze mercury[z]. By means of the barometer and thermometer, the altitude of a mountain may be found to a great degree of accuracy.

3.—*The Rain-gauge,* or *Pluviometer.*

The *rain-gauge* is an instrument to show the quantity of rain which falls upon the earth at any

[z] Though *Reaumur's* scale is seldom used, it may be proper to observe that its freezing point is 0, and boiling water at 80 deg.

place where you may wish to make observations. It consists of a funnel communicating with a cylindrical tube at its bottom, into which the rain is conveyed by the funnel. The depth of the water in the cylinder is measured by a rule fixed to a float, the rule passing through the centre of the funnel. The divisions on the rule show the number of cubic inches of water that have fallen on a surface equal to the area of the top of the funnel. The funnel is so contrived as to prevent the water from evaporating. To use the rain-gauge, so much water must first be put into the cylinder as will raise the float, so that 0 on the rule may exactly coincide with the aperture of the funnel. The gauge should be firmly fixed in a place, where, whatever winds blow, the fall of the rain may not be intercepted by any obstacles. By this instrument, the mean *annual* depths of rain in inches is determined.

4.—*The Hygrometer.*

The *hygrometer* is an instrument to measure the moisture and dryness of the air, and is formed of substances which will expand or contract upon any alteration of moisture. Wood expands by moisture, and contracts by dryness; on the contrary, cord, catgut, &c. contract by moisture, and expand by dryness. The *weather-houses* are very good hygrometers for common purposes. The contraction of the string, by moisture in the atmosphere, forces the male figure out of the door at the approach of *bad* weather; and, as this gradually becomes dry, the string resumes its natural length, and forces the female out of the door at the approach of *good* weather.

'The only hygrometrical instrument I have used,' says Mr. Dalton, 'is a piece of whip-cord, about six yards long, fastened to a nail at one end, and thrown over a small pulley; in this manner it has been kept stretched by a weight of two or three ounces, since September 1787. It is in a room without a fire, and

where the air has a moderate circulation: the scale is divided into tenths of an inch, and begins at no determined point; the greater the number of the scale, the longer is the string and the drier the air. This string has varied in length above 13 inches, or $\frac{1}{13}$ of its whole length.'

§ v. *Miscellaneous Prognostics.*

1. *Lord Bacon's Prognostics from the Seasons.*

1. If the wainscot or walls that used to give out moisture be drier than usual, in the beginning of winter, or the eaves of houses drop more slowly than ordinary, it portends a hard and frosty winter; for it shows an inclination in the air to dry weather, which, in winter, is always joined with frost.

2. Generally, a moist and cool summer portends a hard winter.

3. A hot and dry summer and autumn, especially if the heat and drought extend far into September, portend an open beginning of winter, and cold to succeed towards the latter part of the winter and beginning of spring.

4. A warm and open winter portends a hot and dry summer, for the vapours disperse into the winter showers; whereas cold and frost keep them in, and convey them to the late spring and following summer.

5. Birds that change countries at certain seasons, if they come early, show the temper of the weather, according to the country whence they came: as, in the winter, woodcocks, field-fares, snipes, &c. if they come early, show a cold winter; and the cuckoos, if they come early, show a hot summer to follow.

6. A serene autumn denotes a windy winter; a windy winter, a rainy spring; a rainy spring, a serene summer; a serene summer, a windy autumn: so that

the air, on a balance, is seldom debtor to itself; nor do the seasons succeed each other in the same tenor for two years together. Upon this Mr. Worlidge remarks, in addition to the above, that if at the beginning of the winter the south-wind blow, and then the north, it is likely to be a cold winter; but if the north-wind first blow, and then the south, it will be a warm and mild winter. If the oak bear much mast, it foreshows a long and hard winter. The same has been observed of hips and haws. If broom be full of flowers, it usually signifieth plenty.

> Mark well the flow'ring almonds in the wood;
> If ol'rous blooms the bearing branches load,
> The glebe will answer to the sylvan reign,
> Great heats will follow, and large crops of grain.
> But if a wood of leaves o'ershade the tree,
> Such and so barren will the harvest be.
> In vain the hind shall vex the threshing floor,
> For empty chaff and straw will be thy store.
>
> VIRGIL.

This observation, says Mr. Worlidge, hath proved for the most part true for several years now past; as in 1673 and 1674 there were but few nuts, and cold and wet harvests: in 1675 and 1676, were plenty of nuts, and heavy and dry harvests; but more especially in 1676 there was a great show of nuts, and a very hot and dry harvest succeeded.

2. *Dr. Herschel's Prognostics from the Moon.*

The following table, ascribed to this illustrious astronomer, is taken from the *Encyclopedia Magazine*, vol. ix, p. 24. It is constructed upon a philosophical consideration of the attraction of the sun and moon in their several positions respecting the earth, and, confirmed by the experience of many years actual observation, will, without trouble, suggest to the observer what kind of weather will most probably follow the moon's entrance into any of her quarters; and that so near the truth, that in very few instances will it be found to fail.

NEW OR FULL MOON.	SUMMER.	WINTER.
If it be new or full Moon, or the Moon enters into the first or last quarters at the hour of 12....	Very rainy	Snow and rain
Or between the hours of		
2 and 4.....	Changeable	Fair and mild.
4 .. 6	Fair	Fair.
6 .. 8	Fair, if Wind N.W.; Rainy, if S. or S.W.	Fair and frosty, if N. or N.E.; Rainy, if S. or S.W.
8 .. 10	Ditto	Ditto.
10 .. Midnight	Fair	Fair and frosty.
Midnight.. 2	Ditto	Hard frost, unless wind S. or S.W.
2 .. 4	Cold, with frequent showers	Snow and stormy.
4 .. 6	Rain	Ditto
6 .. 8	Wind and rain ...	Stormy.
8 .. 10	Changeable	Cold, Rain if W. Snow if E.
10 .. Noon...	Frequent showers..	Cold, with high wind.

Hence the nearer the time of the moon's entrance, at full and change or quarters, is to midnight (that is, within two hours before and after midnight), the more fair the weather is in summer, but the nearer to noon the less fair.

The moon's entrance, at full, change, and quarters, during six of the afternoon hours, viz. from four to ten, may be followed by fair weather; but this is mostly dependent on the wind. The same entrance during all the hours after midnight, except the two first, is unfavourable to fair weather: the like, nearly, may be observed in winter.

3. *Select Proverbs relative to the Weather.*

It is an observation of Lord Bacon's, that 'proverbs are the philosophy of the common people,' or, in other words, they are trite remarks, generally founded in truth, and admirably adapted for recollection. Our forefathers had an abundance of odd sayings on the subject of the weather, and some proverbs for every month in the year. These, with some others, we copy from Mr. Ray's Collection, and offer them to our readers, not as infallible guides, but as useful helps for judging of the various changes in the weather. A careful comparison of these sayings with the various phenomena which they promise to foretel, is the only method of proving their truth or falsehood.

1. Janiveer freeze the pot by the fire.
   If the grass grow in Janiveer,
   It grows the worse for't all the year.
2. Who in Janiveer sows oats, gets gold and groats;
   Who sows in May, gets little that way.
   If Janiveer calends be summerly gay,
   'Twill be winterly weather till the calends of May.
3. On Candlemas-day throw candle and candlestick away.
   When Candlemas-day is come and gone,
   The snow lies on a hot stone.
4. February fill dike, be it black or be it white;
   But if it be white, it's the better to like.
5. Februeer doth cut and shear.
6. The hind had as lief see his wife on the bier,
   As that Candlemas-day should be pleasant and clear.
7. February makes a bridge, and March breaks it.
8. March in Janiveer, Janiveer in March I fear.
9. March hack ham, comes in like a lion, goes out like a lamb.
10. A bushel of March dust is worth a king's ransom.
11. March grass never did good.
12. A windy March, and a rainy April, make a beautiful May.
    A March wisher is never a good fisher.
13. March wind and May sun, make clothes white and maids dun.
14. So many frosts in March, so many in May.
15. March many weathers.
16. March birds are best.

17. April showers bring forth May flowers.
18. When April blows his horn, it's good both for hay and corn.
19. A cold April the barn will fill.
20. An April flood carries away the frog and her brood.
21. A cold May and a windy, makes a full barn and a findy.
22. The merry month of May.
23. April and May are the keys of the year.
24. May, come she early or come she late, she'll make the cow to quake.
25. Beans blow before May doth go.
26. A May flood never did good.
27. Look at your corn in May, and you'll come weeping away;
Look at the same in June, and you'll come home in another tune.
28. Shear your sheep in May, and shear them all away.
29. A swarm of bees in May is worth a load of hay;
But a swarm in July is not worth a fly.
30. Calm weather in June sets corn in tune.
31. If on the eighth of June it rain,
It foretels a wet harvest, men sain.
32. If the first of July it be rainy weather,
'Twill rain more or less for four weeks together.
33. A shower in July, when the corn begins to fill,
Is worth a plough of oxen, and all belongs there till.
34. No tempest, good July, lest corn come off blue by.
35. Dry August and warm, doth harvest no harm.
36. If the twenty-fourth of August be fair and clear,
Then hope for a prosperous autumn that year,
37. September, blow soft, till the fruit's in the loft.
38. Good October, a good blast,
To blow the hog acorn and mast.
39. November take flail, let ships no more sail.
40. When the wind's in the east, it's neither good for man nor beast.
41. When the wind's in the south, it's in the rain's mouth.
42. When the wind's in the south,
It blows the bait into the fishes' mouth.
43. No weather is ill, if the wind be still.
44. A hot May makes a fat churchyard.
45. When the sloe-tree is as white as a sheet,
Sow your barley, whether it be dry or wet.

46. A green winter makes a fat churchyard.
47. Hail brings frost in the tail.
48. A snow year, a rich year.
49. A winter's thunder's a summer's wonder.
50. Drought never bred dearth in England.
51. Whoso has but a mouth, shall ne'er in England suffer drought.
52. When the sand doth feed the clay,
England woe and well-a-day.
53. But when the clay doth feed the sand,
Then it is well with England.
54. After a famine in the stall,
Comes a famine in the hall.
55. When the cuckoo comes to the bare thorn,
Sell your cow, and buy your corn:
But when she comes to the full bit,
Sell your corn, and buy your sheep.
If the cock moult before the hen,
We shall have weather thick and thin;
But if the hen moult before the cock,
We shall have weather hard as a block.
56. As the days lengthen, so the cold strengthens.
57. If there be a rainbow in the eve, it will rain and leave.
But if there be a rainbow in the morrow, it will neither lend nor borrow.
58. When the clouds are upon the hills, they'll come down by the mills.
59. Winter's thunder and summer's flood
Never boded Englishman good.
60. If Candlemas-day be fair and bright,
Winter will have another flight:
If on Candlemas-day it be shower and rain,
Winter is gone, and will not come again.

4. *The Shepherd of Banbury's Rules.*

There is no biography extant of the Shepherd of Banbury; who he was we know not, nor have we any proof that the rules called his were penned by a real shepherd; both these points are, however, immaterial: their truth is their best voucher. In the year 1744, Mr. Claridge published them with

copious observations[1], and from him the following prefatory observations are taken; they are delivered in plain and homely language, but are all of good sense.

'The shepherd, whose sole business it is to observe what has a reference to the flock under his care, who spends all his days and many of his nights in the open air, and under the wide-spread canopy of heaven, is, in a manner, obliged to take particular notice of the alterations of the weather; and when once he comes to take a pleasure in making such observations, it is amazing how great a progress he makes in them, and to how great a certainty at last he arrives, by mere dint of comparing signs and events, and correcting one remark by another. Every thing, in time, becomes to him a sort of weather-gauge. The sun, the moon, the stars, the clouds, the winds, the mists, the trees, the flowers, the herbs, and almost every animal with which he is acquainted; all these, I say, become, to such a person, instruments of real knowledge.

'There are a sort of half-wise people, who, from the consideration of the distances of things, are apt to treat such prognostications, as they phrase them, with much contempt. They can see no connection between a cat's washing her face, and the sky's being overspread with clouds, and therefore they boldly pronounce that the one hath no relation to the other. Yet the same people will readily own, that the fluttering of the flame of a candle is a certain token of wind, which however is not discernible by their feeling; because it lies within the compass of their understanding to discern that this fluctuation of the flame is caused by the wind acting upon it, and therefore they are inclined to believe this, though it

[1] This useful tract had become very scarce, but has been lately reprinted, and may be had of J. Barker, 19, Great Russell-street, Covent-garden.

does not fall actually under the cognizance of their senses. But a man of a larger compass of knowledge, who is acquainted with the nature and qualities of the air, and knows what an effect any alterations in the weight, the dryness, or the humidity of it has upon all animal bodies, easily perceives the reason why other animals are much sooner sensible of any alterations that happen in that element than men; and therefore to him the cawing of ravens, the chattering of swallows, and a cat's washing her face, are not superstitious signs, but natural tokens (like that of the candle's fluttering) of a change of weather, and as such they have been thought worthy of notice by Aristotle, Virgil, Pliny, and all the wisest and gravest writers of antiquity.

'But still a few slight and trivial observations of this kind, and such as are in the power of every man to make, go but a very little way in furnishing us with a useful knowledge of the indications of the weather. To supply these, and to have constantly at hand the means of judging of these alterations, men of great genius have invented (and wonderful inventions they are) instruments for measuring the heat, the cold, the weight, the dryness, and the humidity of the air, with great exactness; and upon these they reason as to the changes of weather with great accuracy and certainty. It would undoubtedly be a great folly to pretend to question either the truth of their observations, or the usefulness of them: but then we may have leave to consider how far and to how great a degree they are useful. The thermometer measures exactly the degrees of heat, but the air must be hot to such or such a degree, before it is discerned by this instrument. The barometer indicates the weight of the air, and the rising and falling of the quicksilver expresses the alterations in its weight with wonderful nicety, but then those alterations are the cause of this. In like manner the hygrometer, or hygroscope, measures the dryness or the

humidity of the air very plainly and very exactly, but the weather must alter, must become dryer or moister than it was, before these alterations are visible: and therefore, however ingenious, however curious, however useful, these instruments may be in other respects, they undoubtedly contribute very little to the prognosticating a change of weather at a distance; and it is from the experience of this that they are so little esteemed, so lightly regarded by the common people.

'Our Shepherd's observations are quite of another nature; most of them give us a day's notice, many a week's, and some extend to several months' prognostication of the changes of the weather; and of how great use these may be to all ranks and degrees of people, to the sedentary valetudinarian, as well as the active traveller—to the sportsman who pursues his game, as well as to the industrious husbandman who constantly follows his labour; in short, to every man in every situation, in some degree or other, is so very clear and intelligible, that it would be a mere waste of words, and a very idle display of rhetoric, to attempt the making it clearer. Every man living would be glad to foresee the alterations of the weather if he could; and consequently to most people, if not to all, these observations, grounded on no less than forty years' experience, cannot but be acceptable.'

Rules.

I. If the Sun rise red and fiery, *wind and rain.*

II. If cloudy and it soon decrease, *certain fair weather.*

III. Clouds small and round, like a dapple-grey

with a north-wind, *fair weather for two or three days.*

IV. Large clouds like rocks, *great showers.*

V. If small clouds increase, *much rain.*

VI. If large clouds decrease, *fair weather.*

VII. *Mists.* If they rise in low ground and soon vanish, *fair weather.*

VIII. If mists rise to the hill-tops, *rain in a day or two.*

IX. A general mist before the Sun rises, near the full Moon, *fair weather.*

X. If mists in the new Moon, *rain in the old.*

XI. If mists in the old, *rain in the new.*

XII. *Winds.* Observe that in eight years' time there is as much south-west wind as north-east, and consequently as many wet years as dry,

XIII. When the wind turns to north-east, and it continues two days without rain, and does not turn south the third day, nor rain the third day, it is likely to continue north-east for eight or nine days, *all fair;* and then to come to the south again.

XIV. If the wind turns again out of the south to the north-east with rain, and continues in the north-east two days without rain, and neither turns south, nor rains the third day, *it is likely to continue north-east for two or three months.*

XV. *South-west winds.* After a northerly wind for the most part two months or more, and then coming south, there are usually *three or four fair days at first, and then on the fourth or fifth day comes rain,* or else the wind turns north again, *and continues dry.*

XVI. If the wind returns to the south within a day or two without rain, and turn northward with rain, and return to the south in one or two days before two or three times together, after this sort, *then it is likely to be in the south or south-west two or three months together,* as it was in the north before.

XVII. Fair weather for a week, with a southern wind, *will produce a great drought*, if there has been much rain out of the south before. The wind usually turns from north to south, with a quiet wind without rain, but returns to the north with a strong wind and rain; the strongest winds are when it turns from south, to north by west.

XVIII. *Clouds.* In summer or harvest, when the wind has been south two or three days, and it grows very hot, and you see clouds rise with great white tops like towers, as if one were upon the top of another, and joined together with black on the nether side, *there will be thunder and rain suddenly.*

XIX. If two such clouds arise, one on either hand, it is *time to make haste to shelter.*

XX. If you see a cloud rise against the wind or side wind, when that cloud comes up to you, the wind will blow the same way that the cloud came. And the same rule holds of a clear place, when all the sky is equally thick, except one clear edge.

XXI. Sudden rains never *last long:* but when the air grows thick by degrees, and the Sun, Moon, and Stars shine dimmer and dimmer, then it is likely *to rain six hours usually.*

XXII. If it begin to rain from the south, with a high wind for two or three hours, and the wind falls, but the rain continues, *it is likely to rain twelve hours or more, and does usually rain till a strong north wind clears the air.* These long rains seldom hold above twelve hours, or happen above *once a year.*

XXIII. If it begin to rain an hour or two before sun rising, it is likely to be fair *before noon, and so continue that day;* but if the rain begin an hour or two after sun rising, it is likely *to rain all that day,* except the rainbow be seen before it rains.

XXIV. *Spring and summer.* If the last eighteen days of February and ten days of March be for the most part rainy, then the spring and summer quarters

will probably be so too; and I never knew *a great drought* but it entered *in that season.*

XXV. *Winter.* If the latter end of October and beginning of November be for the most part warm and rainy, then *January and February are likely to be frosty and cold*, except after a very dry summer.—If October and November be snow and frost, *then January and February are likely to be open and mild.*

THE END.

Notices of Time's Telescope for 1814.

'We cheerfully give to Time's Telescope our warmest recommendation as a pleasing and *safe* book for the rising generation.'—*Eclectic Review for February* 1814.

'This Work contains a great variety of very useful information, conveyed in a most pleasing manner. We cannot hesitate to pronounce that it will be popular. It deserves to be so; and it has too many attractions, for every kind of taste, to be overlooked. It will form a delightful as well as instructive present for young persons at Christmas.'—*British Critic for December* 1813.

'This is a valuable compilation.'—*Supplement to Gentleman's Magazine for December* 1813.

'Time's Telescope bids fair to acquire considerable popularity. In truth, it deserves to be popular, for the author has shown an equal degree of acquaintance with the general principles of the subject he has undertaken to elucidate, and of taste and judgment in his illustrative and decorative extracts from various descriptive poets and other writers.'—*New Annual Register for* 1813.

'This Work conveys a very considerable portion of intelligence, that may be new to many and useful to all; and it is recommended no less by the neatness of its typographical execution, than the accuracy of its literary and scientific details.'—*Universal Magazine for January* 1814.

'On a general survey of this book, we do not hesitate to pronounce it as one of the most proper to be placed in the hands of young people. It is a little mine of information; and the mind that can rise from its perusal without having gained some important and useful knowledge, must be strongly encased in the leaden armour of stupidity.'—*Commercial Magazine for February* 1814.

Notices of Time's Telescope for 1815.

'We never met with a compilation better calculated for the use of families, and to serve as a portable companion for young persons, than this elegant little volume, which abounds with valuable information on subjects of general interest, and with a pleasing variety of rational entertainment. The book is written in a popular style, the articles are selected with great judgment from the best authorities; and while the scientific illustrations tend to quicken curiosity, the reflections interspersed with the extracts, occasionally given from the most charming of our poets, will increase the delight afforded by contemplating the works of nature, and raise the mind to a devout admiration of the Divine Author.'—*New Monthly Magazine, Jan.* 1815.

'The Work before us supplies accurate, though popular, instruction on a variety of topics. It is written in a correct and tasteful

style, enlivened by many exquisite quotations from the poets of the day; and is interspersed with such reflections as flow naturally from the conviction that knowledge, to be extensively beneficial, either to its possessor or to others, must be purified by religion, manifested in benevolence, and consecrated to God.'—*Eclectic Review for February* 1815.

'The History of Astronomy, and the first principles of the art, are well displayed in this entertaining volume. It will be the source of much amusement and information upon the mysteries of the Almanack, and the appearances of the heavenly bodies. Much curious matter respecting the several Saints' Days has been collected together; which, with an accurate account of the flowers which blossom and the buds which appear in the course of every month, cannot fail to interest and instruct the reader.'—*British Critic for December* 1814.

'We have no hesitation in giving Time's Telescope our unqualified commendation.'—*Gentleman's Magazine for February* 1815.

'This is the second annual appearance of Time's Telescope, and we willingly confess that it is much improved. The quantity of useful and interesting matter which is here amassed together, distributed with judicious appropriation under each month, is highly creditable to the industry and taste of the compiler.'—*New Universal Magazine for December* 1814.

'This volume contains a good deal of information, useful and pleasant. Opportunity is taken to introduce articles of various descriptions which comprise useful matter, to be met with in no concise form, but in a variety of works only, on the shelves of a well-furnished library. As all have not that accommodation, this moderate-sized volume may, in a considerable degree, serve as a substitute.'—*Literary Panorama for December* 1814.

Notices of Time's Telescope for 1816.

'Time's Telescope is compiled with skill and judgment, and contains much desirable miscellaneous information, and many interesting and instructive sketches, particularly on some parts of Natural History. We recommend this work to the attention of our juvenile readers, who will find it an agreeable and instructive companion.'—*Monthly Review for November* 1816.

'We are glad to see that the Editors of this useful work find encouragement to continue it annually, and that the articles it contains increase in their interest.'—*Gentleman's Magazine for August* 1816.

Notices of Time's Telescope for 1817.

'We have already noticed the preceding volume of this amusing and instructive performance; and we have now little to add to or deduct from the encomiums which we deemed it our duty to pass on the contents of that part; the plan being still the same, and the execution and arrangement as nearly as possible on the same model. We shall not consider it as requisite for us to continue our report of this annual publication.'—*Monthly Review for August* 1817.

'The Almanack, in order to be reduced to a cheap and convenient form, has become so enigmatical, that a more enlarged explanation of its contents and references is very desirable; and such is the purpose of the Time's Telescope, which appears to us to be executed in a very amusing way, and the Astronomical portion of it is prepared evidently by a person of science.'—*Critical Review for December* 1816.

'A very entertaining and useful compendium of multifarious lore.' —*Eclectic Review for January* 1817.

'The industry of the compiler has been successfully exerted in the collection of an entertaining, and, in many respects, useful mass of materials.'—*Antijacobin Review for December* 1816.

'There is in this volume an excellent Introduction to the "Principles of Zoology," quite *studded* with poetical citations; and a copious index is added to the whole series. In point of quantity and quality, indeed, the present is fully equal, if not superior, to any of the preceding volumes; and our readers will not readily find a more attractive "*New Year's Present*" for their juvenile friends, which, while it acquaints them with the pleasing wonders of Nature, teaches them, at the same time, that all these "are but the varied God."—*Gentleman's Magazine for December* 1816.

Notices of Time's Telescope for 1818.

'We cordially recommend this volume to the attention of persons of every age and taste, but particularly to the enquiring youth of both sexes.'—*Antijacobin Review for December* 1817.

'Time's Telescope for 1818 deserves the same praise, and is entitled to the same support and encouragement, which the former volumes have received from the public.'—*British Critic for December* 1817.

'The present volume is quite equal in entertainment and instruction to any that have preceded it.'—*Gentleman's Magazine for November* 1817.

Notices of Time's Telescope for 1819.

'While this annual companion and guide retains the respectable character which now belongs to it, no parlour window, school room, or private study, can well dispense with its presence.'—*New Monthly Magazine, Feb.* 1819.

Notices of Time's Telescope for 1819.

'We have here an old friend with a new face, no less than Old Time with a new Telescope, pointed at the Almanack for 1819; and discovering new beauties in this often consulted, but, generally speaking, ill-understood publication. This is the sixth appearance of Time's Telescope; and it seems to be equally rich in entertainment with any of the series. We have often noticed this elegantly printed volume, this 'attendant bark' upon the good ship 'Almanack.' Long may the author 'pursue the triumph and partake the *profit*' which attaches to its more successful companion!'—*Gentleman's Magazine, Dec.* 1818.

'Time's Telescope, ever various, ever new, is *published* with the Almanacks, and should be *purchased* with them, for we know of no better or more entertaining companion to these annual time-books.' —*Antijacobin Review, Dec.* 1818.

'This unostentatious volume contains a considerable fund of instruction and amusement; and warrants us in recommending it to our readers, as one in which science, taste, and judgment, are combined. The poetical selections are strikingly appropriate, and cannot fail to inspire the reader with pure and elevated sentiments.'—*Journal of Commerce, Dec.* 1818.

'This elegant work is replete with amusement and instruction, and fully supports the character we have given of the five former volumes: they who take a peep through Time's Telescope for 1819, will not repent the money they have paid for this gratification. It is an acceptable Christmas present for youth of both sexes.'—*Literary Panorama, Feb.* 1819.

'Time's Telescope presents us with a new view of the ensuing year. To give variety to an almanack has long been considered as impossible; yet this ingenious little work, by means of recent or passing events, by an appropriate new selection of Poetical Illustrations, and by a new Introduction, offers an amusing novelty, without departure from its original plan.'—*Literary Gazette, Dec.* 12, 1818.

'This instructive annual volume affords as many agreeable prospects for the ensuing twelve months as have been afforded by the same work in any former year.'—*Monthly Magazine, January* 1819.

Notices of Time's Telescope for 1820.

'Time, not the world's Time, with wings besprinkled with cards, dice, and "at homes,"—but the Time of the Astronomer, the Naturalist, and the Historian, again opens his annual *Magazin des Noveautés;* and we can safely assure those who may wish to become purchasers, that all the articles in this literary bazaar are well selected, and of the first quality. This pleasing volume is well adapted for Schools, either as a class-book, or the reward of merit.' —*Gentleman's Magazine, Dec.* 1819.

Notices of Time's Telescope for 1820.

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'This ingenious and amusing Miscellany has, for some time past, obtained a distinguished rank among the annual publications of the day.'—*New Times, Jan.* 27, 1820.

Notices of Time's Telescope for 1821.

'Time flies so rapidly, that a *Telescope* becomes necessary to look at him when past, and is not less amusing to examine him as he approaches. *Time* also is that which we can never *reform*, but still we may improve it: and if it be a mark of wisdom to make the most of our time, it must be allowed that the Editor of the work before us has equally succeeded; for he has not only improved the past to make it useful for the present, but has also made the most of the future, by showing that almost every day in the year is good for something. He who wishes to know why one day is more remarkable than another? Why he must eat mince-pies at Christmas, or Pancakes on Shrove Tuesday? Why he must eat goose at Michaelmas, or be made a goose of on All-Fools-Day?—he who wishes to turn his Telescope on human events, or on the Heavens;—he who wishes to be directed, agreeably to the season, in his observations of nature, enlivened and illustrated by apt quotations from our best poets; or who, in short, wishes to know what time *was* and *will* be, cannot fail of gratifying his curiosity by a reference to this useful little parlour-window book. It has been before the public for some years, and is

now considerably improved in arrangement, as well as in quantity; so that those possessed of former volumes will find that the present is far from being a twice-told tale: even if it were only for the very popular mode in which the interesting subject of Ornithology is treated, rendering it perfectly intelligible to youthful capacities, whilst older readers may find much that they have forgotten. In short, we wish it, and our readers, a happy new year!—*Sun, December* 20, 1820.

'With regard to the poetical citations with which this work abounds, it may be said with truth, that, in collecting the numerous flowers that are continually dropping from the garland of the Muses, the author has contrived to form a tasteful annual bouquet, combining the Elegant Extracts of modern Poetry.'—*Gentleman's Magazine, Dec.* 1820.

'Time's Telescope blends something of the character which belongs to the Literary Pocket Book with that of a general Almanack; but at the same time possessing features different from either of these and peculiar to itself; and being altogether much more useful and compendious, than both.'—*Baldwin's London Magazine, Feb.* 1821.

'To "catch Time by the forelock" is an old, homely, but useful *saw;* but the editor of the work before us seems also to have caught him by the skirt, so multifarious are the subjects which he has rescued from the oblivious grasp of that fell tyrant. There is a time for all things, and this appears to be the eighth time of bringing these very useful reminiscences before the public; not as a mere recapitulation of former editions, but each time with a novelty of selection and a usefulness of reference, that make each edition a new work, whilst they render the series a very convenient adjunct to every library where a ready reference is more particularly required. We trust the author may continue his labours through many new editions; and that WE shall be his reviewers.'—*New Monthly Magazine, March* 1821.

'We feel great pleasure in announcing another volume of this most amusing and valuable series. In conformity with the plan of all the former numbers, which gave each a familiar epitome of some useful and interesting science, the present volume is enriched by an excellent treatise of British Ornithology. In noticing this work last year, we expressed unequivocally our approbation of its plan and execution; but we have since felt that our 'faint praise' approached something near to injustice—not only to the author and compiler, but to our readers, and especially to that most interesting and important portion of them—to provide whom with innocent enjoyments, and to form whose minds to a temper of sincere piety and inflexible morality, is the first of duties with those who exercise the influence of the Press. Of the moral and religious tendency of 'Time's Tele-

scope,' (and in this, as in all other respects, the character of all the volumes is uniform) it is not possible to speak too highly; but it unhappily sometimes happens, that moral and religious books, like individuals of the same estimable qualities, limit the sphere of their beneficial influence by a repulsive severity of demeanour, and a contempt for the lesser virtues—the graces of life. Far different is the character of 'Time's Telescope;' every day it offers some agreeable and seasonable subject for conversation or reflection; diversified with a variety, which can never tire; specimens of poetry by living authors, which charm by their merits and their novelty, or the still higher enjoyment of the revived treasures of our antient writers.—Astronomy, Natural History, and Botany, carried on regularly through the seasons. History, Chronology, in short *quodcunque agunt homines*, so disposed, as irresistibly to compel the most indolent involuntarily to inform himself, without in the least knowing why. The importance of such an acquisition to the possessor of a limited library, cannot be appreciated; and we speak with perfect sincerity when we say, that we never met a book so well suited to the parlour window, or one so well calculated to steal youth imperceptibly into all the departments of knowledge which form a polite education, and through those up to that wisdom, compared with which, the most exalted results of human science are but 'as foolishness.'—*St. James's Chronicle, Dec.* 16, 1820.

'This year's Almanack will be found quite as entertaining and as instructive as the best of its predecessors.'—*Antijacobin Review, Dec.* 1820.

'Seven preceding volumes have attested the zeal, the industry, and the ingenuity of the author of 'Time's Telescope;' and, although it might be supposed that the customs observed on particular days would have been long ago exhausted, yet something to the purpose is still yielded to diligent research; while the ever varying field of nature presents a rich and exhaustless store on which the author can draw freely, and thus render one great feature in Time's Telescope, the Naturalist's Calendar, perpetually novel and interesting. The Introduction to the present volume gives what is modestly termed the Outlines of Ornithology, but which, in fact, is a brief but connected view of that interesting branch of natural history. On the whole, the volume for the present year is equal to any of its predecessors; and we, perhaps, could not pay a higher compliment to a work which has, for seven successive years, enjoyed so large a share of public approbation.'—*Literary Chronicle, Dec.* 23, 1820.

'To young persons, either in town or country, this volume will be very acceptable, as it will furnish them, in one case, with much novel and amusing instruction; and, in the other, will prove an agreeable guide to many of those pursuits which are the peculiar charm of a country residence. We know not any publication of a similar nature in which there is a better union of pleasure and amusement.'—*Monthly Magazine, Jan. and July* 1821.

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